BANK MARKET POWER AND TRADE CREDIT IN COMPARISON BETWEEN SMALL AND MEDIUM ENTERPRISES AND LARGE ENTERPRISES: A STUDY OF VIETNAM LISTED COMPANIES FROM 2008 TO 2013

By

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Table of Contents

ACKNOWLEDGEMENT i
FIGURES vi
TABLES vii
ABSTRACT viii
CHAPTER 1: INTRODUCTION 1
Research Questions: 6
Research Objectives 6
Research Methodology 7
Research Significance 9
Research Structure 10
CHAPTER 2: BACKGROUND OF THE STUDY: AN OVERVIEW ABOUT BANKING SYSTEM AND ENTERPRISES IN VIETNAM AFTER THE FINANCIAL CRISIS. 12
2.1. Vietnam's Macroeconomics and the financial crisis: 12
2.2. Characters of Vietnam Banking System during the crisis period: 16
2.3. The impacts of financial crisis on enterprises in Vietnam: constraints in bank loan's accessing, Government's support and results 25
Manufacturing and Processing Sector 31
CHAPTER 3: LITERATURE REVIEW ON BANK MARKET POWER AND ITS RELATIONSHIP TO TRADE CREDIT OF COMPANIES. 33
3.1. Bank Market Power Measurement and Comparison in Bank Competition between SMEs and LEs: 33
3.1.1. Structure – Conduct – Performance (SCP) hypothesis and its problems: 34
3.1.2. Lerner Index: 38
3.1.3. Bank Competition towards the market of SMEs and LEs: 41
3.2. Literature Review on the relationship among bank market power, bank loans and trade credit: 42
CHAPTER 4: METHODOLOGY OF CALCULATING BANK MARKET POWER AND ANALYZING ITS RELATIONSHIP TOWARDS TRADE CREDIT USED BY COMPANIES. 49
4.1. Hypotheses: 49
4.2. Data sampling: 50

4.3. Data collection: 51
4.4. Methodology of analysis: 53
4.4.1. Bank Market Power: 53
4.4.2. The empirical model on the relationship between Bank Market Power and Trade Credit used by companies: 56
CHAPTER 5: RESULT OF BANK MARKET POWER AND THE EMPIRICAL MODEL. 64
5.1.Bank Market Power: 64
5.1.1.Descriptive Result: 64
5.1.2.Translog Cost function and Bank Market Power Result 65
5.2.The empirical result about the relationship between BMP and Trade Credit Used of non-financial companies: 68
5.2.1.Descriptive results: 68
5.2.2.Results for the relationship between Bank Market Power and Trade Credit 70
CHAPTER 6: DISCUSSION AND CONCLUSION 74
6.1. Bank market power in Vietnam: 74
6.2. Bank Market Power and Trade Credit: 77
6.3. Other factors and Trade Credit: 81
Bank Performance (BROA) 81
Firm Performance 82
Firm efficiency 83
Current Assets 84
6.4. Conclusion: 85
APPENDIXES 88
Appendix 1. CPI growth rate in Vietnam from 2007 to 2013 88
Appendix 2. Total Social Invested Capital in Vietnam from 2007 to 2013. 88
Appendix 3. Collected and Allocated FDI in Vietnam from 2008 to 2013. 89
Appendix 4. Quantity of Banks in Vietnam from 1991 to 2009. 89
Appendix 5. Banking Market share comparison in 2012 and 2007 90
Appendix 6. Reasons for enterprises stop activating in 2012. 90
Appendix 7. Result of Marginal Cost and Bank Market Power to SMEs and LEs. 91
Appendix 8. Results of the empirical models 95

Appendix 9. Results of the original model. 99
Appendix 10. Credit market share in 2012 103
REFERENCE 104

FIGURES

Figure 2.1.1. GDP growth rate of Vietnam from 2007 to 2014. 14

Figure 2.2.1. Total Assets' Growth in several main banks in Vietnam from 2008 to 2013..... 19

Figure 2.2.2. Deposit and Lending's growth rate from 2001 to 2012 20

Figure 2.2.3. Average and Deposit and lending rate from 2008 to 2013 21

Figure 2.2.4. Bad Debt rate over Total Assets of Vietnam from 2008 to 2009..... 22

Figure 2.2.5. Quantities of branches over Vietnam in 2013..... 23

Figure 2.3.1. Percentage of Economic Sectors in Business's Quantity, Labor and Capital in 2010 26

Figure 2.3.2. Criterion of identifying Small and Medium Enterprises..... 27

TABLES

Table 2.1.1. GRDI rank from 2008 to 2014of Vietnam on A.T. Kearney's 15

Table 4.4.2.3.1. Correlation Matrix of independent variables in the model in the case of LEs... 61

Table 4.4.2.3.2. Correlation Matrix of independent variables in the model in the case of SMEs. 62

Table 5.1.1.1. Descriptive statistics of banks working with SMEs and LEs. 65

Table 5.1.2.1. Results of Translog Cost Function to SMEs and LEs. 66

Table 5.1.2.2. Results of Marginal Cost and Bank Market Power to SMEs and LEs. 67

Table 5.1.2.3. The result of pair sample t-test in BMP in case of SMEs and LEs 68

Table 5.2.1.1. Statistics of companies researched in the study 69

Table 5.2.1.2. Statistics of SMEs and LEs researched in the study 69

Table 5.2.1.3. Statistics of inputs and outputs in the empirical model 70

Table 5.2.2.1. Results of the empirical model on the relationship between Bank Market Power and Trade Credit 71

Table 6.2.1. Results on Bank Market Power and Trade Credit. 78

Table 6.3.1. Bank Performance and Trade Credit 81

ABSTRACT

Bank Market Power in the financial market has been a fierce discussion in the academic field. In this thesis, the power along with its influence on the decision of using another resource, Trade Credit, of companies will be researched under the circumstance of the 2008 financial crisis with the collapse of the banking system in the world and the depression of the global economy. The aims of this thesis are not only to evaluating Bank market power and its effects on Trade Credit but to make the comparison between Small and Medium Enterprises and Large Enterprises in Vietnam, the developing country with one particular circumstance of highly concentrated but competitive banking system under the deep interference of Government.

Take the advantages from previous researches, Lerner Index with Translog Cost Function is used to calculate Bank Market Power of Vietnamese Banks, while a simple linear regression model is utilized to evaluate the relationship between the power and Trade Credit use of Companies. The research is conducted on the Manufacturing and Processing listed companies during the period from 2008 to 2013. The data is collected and calculated from the annual financial statements of companies and banks.

The results of the research indicate that Vietnamese Banks posses an extremely high market power. In addition, its relationship to the other resource follows the *information hypothesis* with the attendance of business network and lending relationship. It means that the higher the competition is, the more available the bank loan is, hence, the less Trade Credit the company uses. In most of the cases, SMEs are more vulnerable than LEs does.

Key words: Trade Credit, Bank Market Power, Small and Medium Enterprises, Large Enterprises, comparison, Vietnam Banking System.

CHAPTER 1: INTRODUCTION

From 2008 to now is an extreme period with the financial crisis started by the collapse of Lehman Brothers and spread to over the world. According to Kawai (2009), though it was not originated from Asia, its impact on this region was not less than others. One significant impact is the shortage of capital and demand of finding an alternative resource during the time when formal financial institutions like banks going bankruptcy or tightening their credit flows (Yang, 2011).

In the general global picture, Vietnam is one particular point that in the time when banks all over the world shut down, their colleagues in this country massively increased (Nguyen, D.L, 2008) and in two years later bad debt bloomed in the whole banking system (VID Public Bank, 2013). To prevent the problem, banks are tightening the credit out flows (Minh Phuong & Duc Kien, 2014); at the same time, the capital mainly went into the big projects of large companies (LEs) and state-owned groups, while only 15% of the number of Small and Medium Enterprises (SMEs) could access this capital (Nguyen, H.H, 2014). Moreover, 38 banks with 9000 branches all over the country (VPBank Securitites, 2014) is a quite big number; but according to KPMG (2013) the group of 4 main state-owned banks is dominating the loan market notwithstanding. This unique situation is a good chance to research about the relationship between banks and non financial firms as well as its impacts on the activities of firms in the condition of being constrained in finance.

Firstly, to evaluate the relationship between banks and its customer in the situation of high competition, Bank Market Power is a wide-range-applied indicator. According to OECD (n.d), this index reflects the ability of a firm, industry or market to set price for its products at the level higher than that should be to win under competition. Despite the fact that Market Power itself was introduced from the beginning of economics, how to calculatethe index isa difficult question with many fierce arguments. The Structure – conduct – performance (SCP) hypothesis with Herfindahl-Hirschman Index (HHI) as the representative is widely used in empirical studies such as Prager & Hannan (1998), Al-Muharrami, Matthews and Khabari (2006), recently Mercieca, Schaeck, and Wolfe (2009) and other researches. In short, HHI evaluates the concentrated level of the market by summing the market share square of n firms in the market. The reason HHI became popular is that it is employed in competition analysis by the Department of Justice and the Federal Reserve of America (Rhoades, 1993). However, Berger, Demirgüç-Kunt, Levine, and Haubrich (2004) pointed out the problems of HHI, in general SCP,as at first the possibility to have endogeneity with profitability, and secondly the equation of the competitive advantage of small banks with large banks, while it supposes to be different. Hence, recently other measurements were applied, and the most fundamental and standard indicator, which was raised from the basic definition of competition, now widely applied is Lerner Index. Introduced by Lerner (1934), this index simply evaluates the market power as the excess of price over margin cost (OECD, n.d). It is considered as “sharp the economist’s understanding of monopoly power” (Elzinga & Mills, 2011).

Nevertheless, the difficulty in calculating the indicator is how to measure marginal cost of a firm or industry, which cannot be directly measured or observed. Therefore, despite of its commodity in academic field, the index is applied in wide range just in recent years. In comparison, these two indicators are both popular, however to evaluate the market power in country like Vietnam with numerous banks and without marketshare data at each province, Lerner Index could reflect the situation of Vietnamese Banking System with the deep look into the power of banks itself but not just the concentration.

At the next stage, in developing area as Vietnam where the financial market hasn't been completely developed and banks are the main player, how bank market power affecting the bank credit should be considered deeply and clearly. The aspect has been arguing for long time in the academic site. The traditionalhypothesis supports that the market with higher concentration level and power is less available in bank credit and charge at higher rate (Berger, Demirgüç-Kunt, Levine, & Haubrich, 2004 and Beck, Demirgüç-Kunt, & Martinez Peria, 2008). On the opposite site, Petersen and Rajan (1995) argued that the high level of competition limits the bank to gain high potential benefit from its customers, resulting in either less credit available or higher interest charged. Despite the fact that this two opinions could be applied in each situation of each country or area differently, whether the relationship follows which way strongly affect the possibility accessing bank capital and leading to one of the most important and available alternative financing resources of companies, Trade Credit.

The shortage of capital, according to Bastos and Pindado (2013), leads to the movement to trade credit because two main reasons: trade credit could act as a substitute financial resources and can be complement to bank capital. In addition to that, Account Receivable or Account Payable in some countries such as France, Germany and Italy could take account of up to 25% of the total asset (Demirguc-Kunt & Maksimovic, cited in Bastos & Pindado, 2013). There were several researches on trade credit during the current financial crisis, such as credit contagion by Basto and Pindado (2013), impacts on SMEs in Japan by Taketa (2009) or the role of trade credit in the relation with bank credit during the current crisis by Yang (2011). Moreover, Carbó-Valverde, Rodríguez-Fernández and Udell (2012) also identify the level of Bank Finance Constraints to SMEs in Spain by using Disequilibrium model with the link in Bank Market Power. Though these researches gave different direction in the use of trade credit, its definition normally is limited in Account Payable to Suppliers. On the hand, Ferris (1981) provided another notion of trade credit as below:

*"Trade credit is viewed as a mechanism that **separates**the exchange of money from the uncertainty present in the exchange of goods"*

According to this definition, Trade Credit includes two conditions: (1) when the buyer gain the opportunity to pay after receiving goods or service; and (2) when the supplier gets money from the buyer in advance along with obligation to provide goods or service in future. In other words, the attitude of choosing an informal external financial resource of a company should be studied towards both its suppliers and customers.

In addition, it's notable that most of researches on capital shortage and financing resources replacing bank loans focused on SMEs. The reason for the concentration is SMEs are normally considered as a vulnerable object due to the lacking of information and the higher dependence on bank loans than LEs (Carbó-Valverde, Rodríguez-Fernández and Udell, 2009). Berger, Demirgüç-Kunt, and Martinez Peria (2008) also showed that large banks in developing countries tend to offer to SMEs less bank credit charged at higher rate than they do to LEs. In addition to that, the research of Beck, Demirgüç-Kunt and Maksimovic (2004) indicated that the concentrated level of bank market move in the same direction to the financial constraint of the company, and the level increases from LEs to SMEs. Nevertheless, aside from the fragile position of SMEs is their potential development in future which causes bank to look at them as the core business. The actual sector earning advantages in the market toward SMEs is large banks with multi-services offered in large scale (De la Torre, Peria and Schmukler, 2010). In addition to that, large banks were hit by the financial crisis before small banks were and in different aspects (Carbó-Valverde, Rodríguez-Fernández & Udell, 2012). Hence, apparently LEs might be not in the better situation in comparison to SMEs and should be considered in the situation of financial constraints in a similar treatment. Therefore, a comparison between SMEs and LEs on the impact of banks on the internal decision of using financing resources of companies in developing countries like Vietnam is needed.

Research Questions:

From the light of the above reasons, this research would provide the deep view about the position of bank when working with companies in the situation of highly competition yet concentration in Vietnam Banking system and its influence on the use of Trade Credit. Besides from this, others external and internal factors are also considered to give the company management the deep view about which aspects actually do have effect on their decision. In more details, the following questions would be analyzed:

Question 1: In which case, working with Large Companies or Small and Medium Companies, does Bank posses higher Market Power?

Question 2: How does Bank Market Power affect the decision of using Trade Credit of Companies? How is the influence different from Large Companies to Small and Medium Companies?

Question 3: Besides from Bank Market Power, how do other factors affect the decision of using Trade Credit of companies? What are differences between Large Enterprises and Small and Medium Companies?

Research Objectives

In general, the purposes of this thesis are to provide an overview about differences in the real situation towards SMEs and LEs in the relationship between them and banks and its impacts on firms' operation. Hence, to meet these purposes, several objectives to achieve in this thesis are:

1. To evaluate the position of banks in the loan market towards Companies in the situation of Vietnam.
2. To analyze the level of influence of Banks on the decision of using Trade Credit of Companies.
3. To discover others external and internal factors that affect the use of Trade Credit in the companies.
4. To examine the relationship to both suppliers and customers of companies in the situation of lacking capital.
5. To explore the actual situation of SMEs and LEs in finding a financial resources under the circumstance of being constrained in finance.

Research Methodology

To reach the objectives and answer the questions of the thesis, the method of this thesis is quantitative analysis with a number of hypotheses being set up based on the literature review about bank market power, its influence on bank credit and trade credit; and to test the hypotheses secondary data is collected and analyzed. In more details, the research follows the concrete methodology as below:

Firstly, to answer the first question, empirical studies on market power arereviewed, in which the SCP hypothesis (HHI) and Lerner Index will be considered in term of advantages and disadvantages of each index in order to give out the answer of having the later indicator as the most suitable applied under the special circumstance in Vietnam.

Secondly, to answer the last two questions, previous researches on the relationship between Bank Market Power and Bank Credit, Bank Credit and Trade Credit, and Bank Market Power and Trade Credit are studied deeply in order to build a suitable regression model for the final pair of variables and analyzing the result from that model.

Regarding to data collection, the research is conducted on the stock market, specified in Manufacturing and Processing sector with 274 companies activating. Hence, the data for the analysis is basically collected from the audited financial statements of companies, which is required to be public annually by State Security Commission of Vietnam. The relevant ratios are also directly calculated from the statements instead of using those provided by other sources to ensure the degree of accuracy. In addition to that, the data for Bank Market Power calculation is also gathered from Banks' public financial statements.

In data analysis, the first step is to calculate Bank market power by using Lerner Index. The elements in Lerner's formulation follow the identification of Carbó-Valverde, Rodríguez-Fernández and Udell (2009 & 2012) and Ariss (2010). Within this, Margin Cost is calculated from the translog cost function by Ray (1982).

After finishing the calculation and comparison between SMEs and LEs, Bank Mark Power is used as the main variable of the regression model toward Trade Credit.This formulation is mainly hired from Carbó-Valverde, Rodríguez-Fernández and Udell (2009) with suitable adjustments to the situation in Vietnam. In making

comparisonbetween SMEs and LEs, one model is applied for both sidesto discover the effect of similar factors on each side.

The research period is from 2008 to 2013, so this six-year duration is not suitable to run a reliable time series regression. Hence, the statistical technique in this research is simple linear multi-variable regression model. In addition to that, due to the limitation of data collection and that the research period is completely under the same condition of after the financial crisis, the external systematic factors such as GDP will not be included in the formulation. The data is worked on Econometric Views (Eviews) to test the statistic significance of the main factoras well as others internal and external variables with the decision of using Trade Credit.

Research Significance

Firstly, Vietnam has very particular characteristics as being very competitive but highly concentrated. Moreover, after the financial crisis, Vietnam banking system has been through several important changes starting from the bloom of bank all over the country, followed by the boom of bad debts in the whole system, leading to a mass of Merger and Acquisitions to help banks survive. These changes obviously effect the position of bank in the market and the relation between them and non-financial firms, while none of the academic field has been conducted on the similar situation. Hence, this thesis will provide the deep insight in market power of the most important formal financial institution in Vietnam and its effects on the decision of using an alternative external

resource as Trade Credit of non-financial firms and open the opportunity to look deeper into involved problems in developing countries.

In addition to that, by applying the definition of Ferris (1981) about Trade Credit, the research studies the relationship of a company toward both its suppliers and customer in the condition of being constrained from formal financing resources, while previous researches normally focused on the supplier's side.

Moreover, by comparing SMEs and LEs, the research provides the statistical proof about differences between the situation of these two sectors and which factors actually do have impacts on their decisions. This in turn might give an introduction to whom that concern such as policy makers about the behavior of companies in different scale.

Research Structure

Chapter 1: This chapter gives the general view of the thesis, started with the impacts of financial crisis on Asia and Vietnam and introduction of Vietnam Banking System. It also pointed out the significance of the study and the method that the study is conducted.

Chapter 2: This chapter goes into details on the background of the thesis with the picture of bank industry and companies and the focus on the similarities as well as the differences between SMEs and LEs. It also provides the reason of conducting the research.

Chapter 3: This chapter covers the literature review of the research. It is divided into two parts in order to clearly give the approach of previous studies on the problems

Chapter 4: This chapter explains the data collection and the methodology which is used to analyze the data and also is brokendown into two parts of Bank Market Power and its relation with Trade Credit use.

Chapter 5: This chapter presents the result of data analysis that applies the model introduced in previous chapter.

Chapter 6: This chapter discusses the findings withdrawn from the empirical results and conclusion for the thesis.

CHAPTER 2: BACKGROUND OF THE STUDY: AN OVERVIEW ABOUT BANKING SYSTEM AND ENTERPRISES IN VIETNAM AFTER THE FINANCIAL CRISIS.

In this chapter, firstly the general view about Vietnam Economy with the high focus on the period after 2008 will be provided. The following part describes Vietnam Banking System, their activities before and after the crisis. Finally, the differences between SMEs and LEs in every aspect including impacts of the financial crisis and the method the companies used to overcome the obstacles. Also, a short introduction about Manufacturing and Processing Sectors and the reasons for choosing this part of the economy to research will be explained in this final part.

2.1. Vietnam'sMacroeconomics and the financial crisis:

Lying in the dynamic Southeast Asia, Vietnam is considered having a high potential economy. Before 2008, GDP growth rate per year of the country reached 7.5% (Tumbarello, 2007) and was just below China's (10.5%) and India (8.8%) (Salsecci et at., 2008). In addition, in 2008 Vietnam took the crown from India's hand to be the most attractive retail market in A.T. Kearney's annual survey Global Retail Development Index (A.T. Kearney, 2008a). The pinnacle was the country became the 150th member of World Trade Organization (WTO). From the light of these shining points, Vietnamese people and foreign investors highly expected an explosion of the country's economy when domestic savings brought out along with international capital flowed in created an enormous investment in Vietnam; at the same time, VN index, the "barometer" of

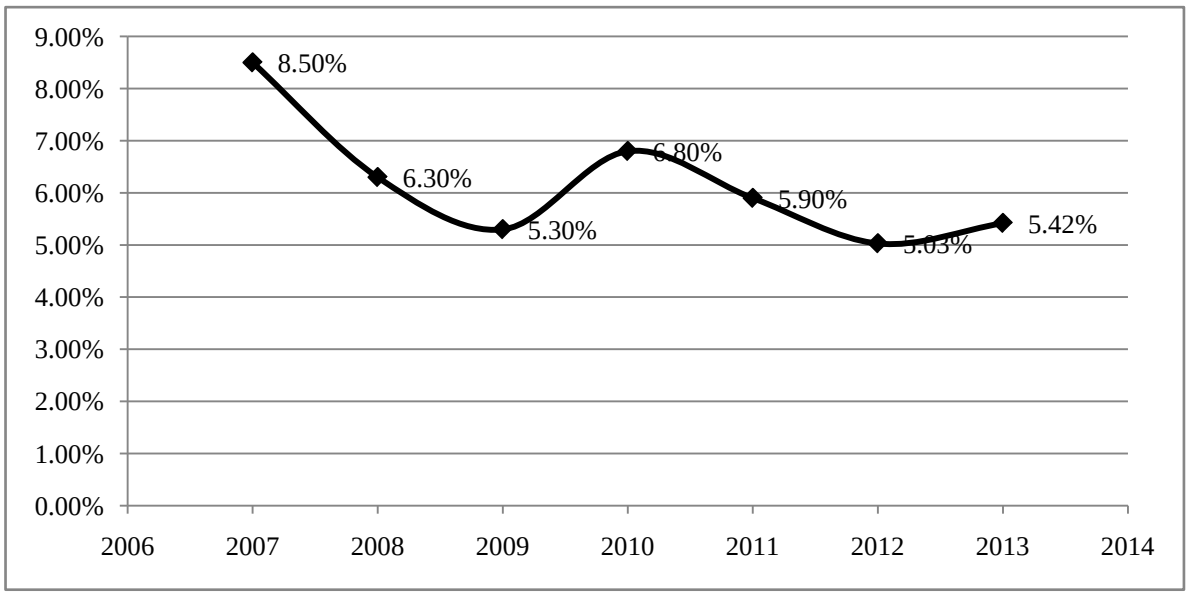
Vietnam Stock Exchange and of Vietnam Economy in general, increased fourfold within more than one year (Huynh, 2013).

The picture of the world was not beautiful as of Vietnam. The collapse of international financial system with Lehman Brothers in 2008 as the starting point had stricken out a series of economies, from large to small, in all over the world. Asia, for some reasons, was affected less than US and Europe was in the financial sector; however, the attack came from the direction of foreign trade activities, because the two later areas are the main customers of Asia, not mentioning that US hold the key of foreign trade – dollars (Kawai, 2009). Another impact, by Akyuz (2010), was capital flow with the reason that the main part of capital in Asian countries came from direct and portfolio investments, which in turn were highly affected by the crisis. The third impact was in remittances, that Akyuz (2010) argued that was due to the reduction of incomes and wages.

Vietnam, on the other hand, was“one of the only South East Asian emerging economies not to have gone into recession in 2009 in the wake of the world crisis” according to Razafindrakoto and Roubaud (2010). Nevertheless, according to Huyen Thu (2013), the adverse impact of the crisis on this country was still considered as the key factor putting the economy to the bottom of the economic cycle, which was shown clearly in the national indexes including GDP growth rate, CPI (Consumer price index) growth rate or inflation rate, the total social invested capital, and the amount of collected and allocated FDI (Foreign Direct Investment).

Firstly, GDP, due to the impacts of the crisis on the country's main importing partners like EU and the decrease in domestic demand, couldn't get out of the downward trend. After reach the peak in 2008 at 8.5%, the number kept falling down. Some slight recoveries were observed, but basically GDP hasn't been able to achieve the same level before the crisis.

Figure 2.1.1.GDP growth rate of Vietnam from 2007 to 2014.



Unit: Percentage - Source: Consolidated from Vietnamese General Statistic Office

Moreover, CPI growth rate showed anuglier picture than GPD did. From 2007 to 2013, the yearly inflation rate went up to nearly 20% twice in 2008 and 2011 (see Appendix 1). In recent years, the rate tends to slow down, but in the analysis of several researchers, this trend was partly caused by the exhaustion of consumer forces (Huyen Thu, 2013). To decrease the inflation, several methods, especially tightening monetary policies, were applied by Vietnam

Government and had some results. Nonetheless, new problems arisen from these approaches, includingreducing the total social invested capital scale, which the ratio of total social capital over GDP continuously went down from around 43% to 26% (See Appendix 2).

In addition to that, Vietnam has become less attractive in the eyes of foreign investment. As mentioned below, in 2008, A.T.Kearney ranked the country as the first market that global retailers should enter. However, its position continuously dropped to the 6th in 2009, 14th in 2010, 23th in 2011, totally disappeared from top 30 in the two years later and just returned to the 28th last year. It's easy to see that, while other factors have fluctuation, the score of Market attractiveness of Vietnam fall down sharply from 57 to only 3.8.

Table 2.1.1. GRDI rank from 2008 to 2014of Vietnam on A.T. Kearney's

Year	Rank	Market Attractiveness (25%)	Country Risk (25%)	Market saturation (25%)	Time Pressure (25%)	GRDI Score
2008	1st	57	34	67	99	88
2009	6th	16	34	74	97	55
2010	14th	12.3	49.4	50.2	89.1	50.2
2011	23th	8.4	35	48.8	85.1	44.3
2012	-	-	-	-	-	-
2013	-	-	-	-	-	-
2014	28th	3.8	21.9	75	55.7	39.1
Note		100 = high attractiveness	0 = high risk; 100 = low risk	0 = saturated; 100 = not saturated	0 = no time pressure; 100 = urgency to enter	

Source: Consolidated from A.T. Kearney (2008b, 2009, 2010, 2011, 2012, 2013 & 2014)

The reasons for Vietnam losing the position, according to A.T.Kearney (2011) and Thu Ha (2012), are the poor infrastructure, high inflation, value decreasing of VND and problems in public finance. As a result, collected and allocated FDI moved in the same direction with the attractiveness. FDI collected reduced from USD 71.7 billion in 2008 to 13 billion in 2012, while allocated FDI has been struggling around the level of 10 - 11.5 billion (See Appendix 3). One of the important reasons for this problem is from the economic growth of the country, which in turn was badly affected by the crisis.“Before, Vietnam’s economic growth rate was often ranked at the high position in the world, but now the number was down to under the average level of Asia. In 2011, it even went down to under the average level of ASEA”, said Former Minister of Planning and Investing Ministry Tran Xuan Gia (cited in Thu Ha, 2013).

In general, the 2008 financial crisis have affected every economy in the world. Vietnam is not an exception. The obstacles in the macroeconomic during this current period, from growth rate, inflation to capital declination, in their turn have had quite big impacts on the country’s banking system as well as enterprises activating in the region as described in the following parts of this chapter.

2.2. Characters of Vietnam Banking Systemduring the crisis period:

To clearly understand the situation of the Banking System in Vietnam after the crisis, it’s necessary to acknowledge its history and condition up to 2008.

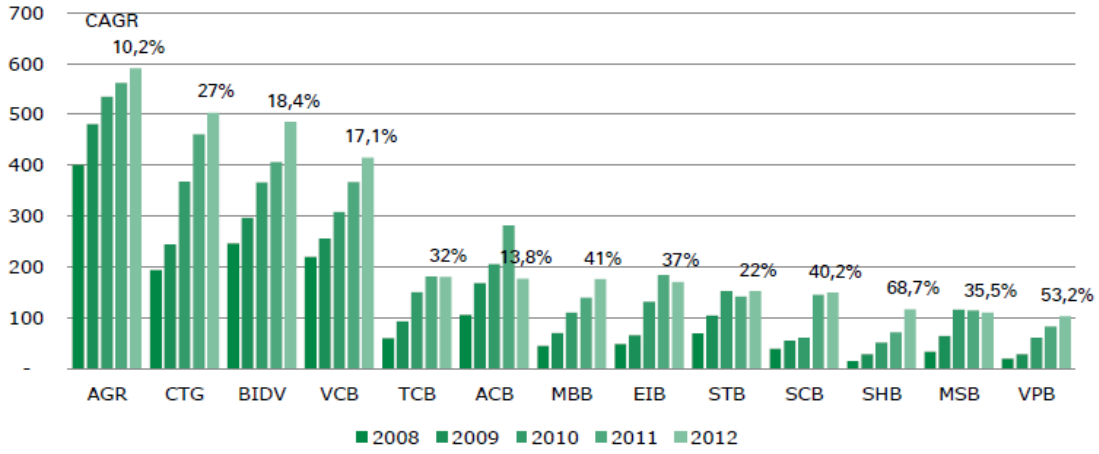
As a socialist country, from 1951 to 1990, Vietnam had one only bank – Vietnam Central Bank that was directly under the government as a central bank and at the same time performed functions of a commercial bank. In 1988, in order to change the economy from Planning to Market – Oriented, the Council of Ministers released the Decree 53-HDBT to change the Banking system from one-level with one single bank activating to two-level, separating the Central Bank who manages monetary and credit policies in the national scale from Specialized Banks who act as financial intermediate institutions making business in the economy. According to MHBS (2009), after this Decree was published, the number of commercial bank new opened or activating increased swiftly from 4 in 1991 to 51 within six years. After the 1997 Asian financial crisis, several banks were bankrupted or revoked the operating permit, so the bank quantity had reduced. At the point before the 2008 financial crisis, the system contented four state-owned commercial banks, 39 private commercial banks, 5 join-venture banks and 41 branches of foreign banks; and these numbers had tendency to go up (See Appendix 4).

Regarding to the competition and domination in the market, according to MHBS (2009) and VPBank Securities (2014), in 2008, total assets of two former categories of bank were VND 1,700 billion, in which those of the four state-owned banks including Vietnam Bank for Agriculture and Rural Development (AGR), Join Stock Commercial Bank for Investment and Development of Vietnam (BIDV), Join Stock Commercial Bank for Foreign Trade of Vietnam (VCB), and Vietnam Join Stock Commercial Bank for Industry and Trade (CTG) occupied 60% of the system's number. These four banks also took

account of 40% of the total charter capital and of 60% either in deposit market or loan market of the whole system. It's noticeable that none of these four banks actually were equitized until 2008. From these factors, it could be seen that Government played the key role in the banking system in Vietnam before 2008.

As mentioned above, the 2008 crisis did not directly affect the financial system, including Banking, in Vietnam. Hence, in following years the system still witnessed an increase trend. This firstly was shown in the total assets of banks, that from 2008 to 2011 this number non-stop grew up. One remarkable point was, the CAGR (Compound Annual Growth Rate) of four main state-owned banks was much lower than those of private commercial banks were. However, from 2012, when the four former banks still continued the trend, several in the later banks started to stop short, some even moved in the opposite way; this, according to VPBank Securities (2014), is a manifestation of the higher risk level of the private sector than the government-owned.

Figure 2.2.1. Total Assets' Growth in several main banks in Vietnam from 2008 to 2013

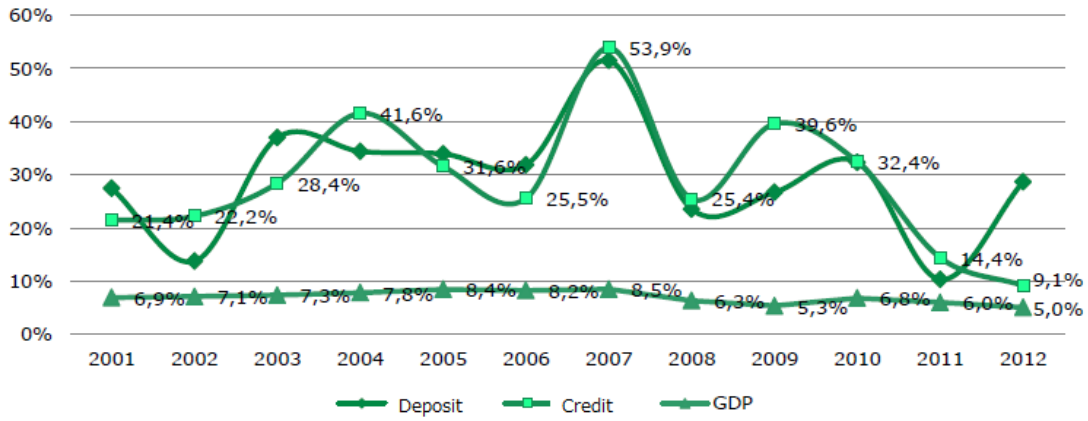


Source: VPBank Securities (2014)

In addition to total assets, one important aspect proclaiming the development of banking system is the growth rate in deposit and lending. From 2008 to now the scale of credit always move up. Nevertheless, the rate of growth dramatically fluctuated. In 2008, State Bank of Vietnam issued various tightening monetary policies to deescalate the "too hot" growth rate in the system in previous year; hence, the rate decreased from 53.9% in 2007 to 25.4% in 2008. One year later, the high demand of credit made the growth rate in lending increase sharply. The point is, according to the analysis of VPBank Securities (2014), credit market developed too quickly when its growth rate was normally at four times higher than GDP's, which in turn might cause a depression. At the same time, the effects of the global financial crisis now were brought into plays. The result was from

2010 the rate of lending market have fall down as fast as when it went up and dropped to the lowest level since 90s, 9.1% in 2012

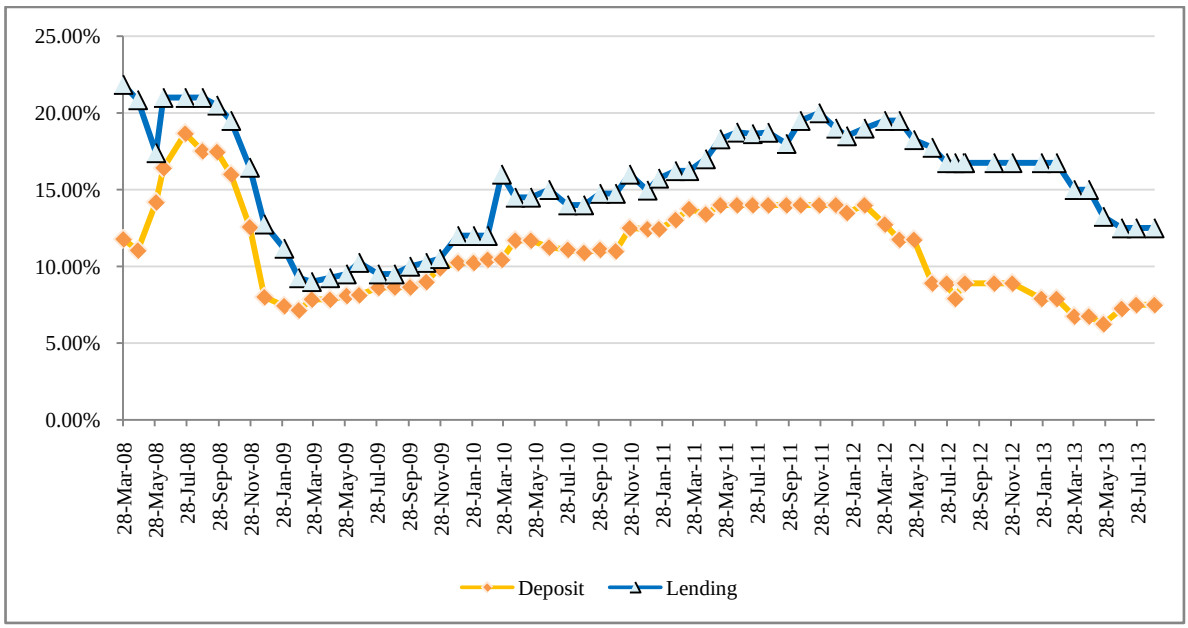
Figure 2.2.2.Deposit and Lending's growth rate from 2001 to 2012



Source: IFS, cited in VPBank Securities (2014)

Regarding to the liquid ability, though the total assets and credit had remarkable expansion from 2008, the banking system fall into difficulties in liquidity twice. The first time was in 2008 when the economy developed too quickly, resulted in high demand in credit from the corporate sectors. Besides, the State Bank of Vietnam issued tightening monetary policies such as increasing the required reserve rate from 10% to 11% (Nguyen, T.K.T, 2009). Consequently, Banks offered extremely high rate to attract deposit, which meant they required high return from companies. In June 2008, the interbank rate was 40%, while deposit rate and lending rate in some banks were 20% and 25% respectively. This "hot" trend partly made the inflation reaching to nearly 20%, causing the State Bank to regulate the ceiling lending interest rate not allowed to excess 150% of the Basic Interest Rate offered by the State Bank.

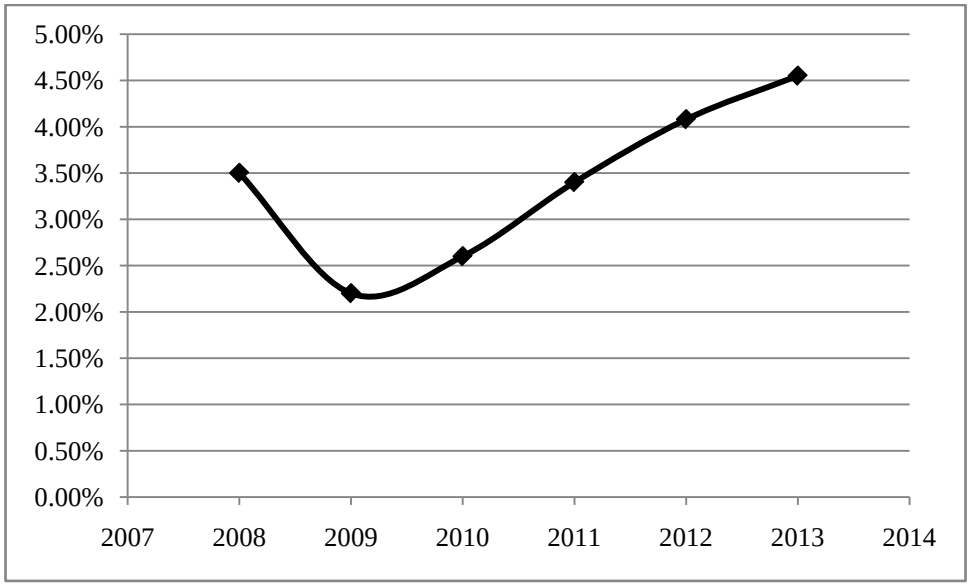
Figure 2.2.3. Average and Deposit and lending rate from 2008 to 2013



Source: Stox Plus Corporation, 2013.

The second time banks facing the liquidity problems was in 2011, which reflected clearly the indirect impacts of the crisis on Vietnam's Banking System. According to Salsecci et at. (2008), one of the weakness problem of Vietnamese banks is the loan was guaranteed mainly on real estate securities. However, in 2011 – 2012, the value of this sector dropped sharply by from 5% to 20% (VnEconomy, 2012a), therefore, banks had been facing the problem of losing their loan's value. Moreover, since the crisis affected the economy through both domestic and international demand declination, a not small number of Vietnamese enterprises went bankruptcy and were unable to repay the loan. Hence, the bad debt percentage constantly rose over years.

Figure 2.2.4. Bad Debt rate over Total Assets of Vietnam from 2008 to 2009



Source: State Bank of Vietnam, Cited in VPBank Securities (2014)

However, the Non Performing Loans (NPLs) rate provided by the State Bank, for example 4.7% in October 2013, was much lower than Moody's 15% in the same period (Nguyen, H., 2014). VPBank Securities (2014) also argued that the number shown in financial statements of Vietnam's banks did not reflect the real condition, since a large amount of risky loans was put in the noticed category (the less risky than bad debt but need to be paid attention).

During the period, along with the above significant fluctuation, the competition in the system also varied from the point of 2008, in which the outstanding point is the rise of the private commercial bank sector occupied. In 2008, the four state-owned banks took the possession of 60% as mentioned in the previous part; however, their percentage six

year later was reduced by 16% to 44%, while the private sector with 42% nearly reached to the state-owned sector (State Bank of Vietnam, cited in Tran, B.T., 2015).

In addition, though the quantity of State-Owned Banks became 5, their market share in credit market was declined to 46% in 2012, with 15% lost in the hand of Joint Stock Commercial Competitors. The reason for this displacement, according to VnEconomy (2012b), is the expansion of Join Stock Banks in the number and scale operating of branches. In 2013, the Joint Stock Sector possessed 4,264 branches, just 200 less than the State-Owned Sectors.

Figure 2.2.5.Quantities of branches over Vietnam in 2013.

Area	State-Owned Banks	Joint Stock Banks	Foreign Banks
Hanoi	692	892	25
HoChiMinh City	495	1248	30
Danang	84	179	3
Cantho	54	137	7
Others	3149	1808	27
Total	**4474**	**4264**	**92**

Source: State Bank of Vietnam, Cited in VPBank Securities (2014)

However, VPBank Securities (2014) pointed out that Joint Stock Banks mainly focus on big cities and high-developed economic area. This is reasonable that, according to KPMG (2013) and Pham, T.T (n.d.), the State sector has long history as well as strong capital (only 4 banks account for 40% total assets and chartered capital). Hence, in the current period, these four banks still dominate the market.

In addition to that, the competitive advantage on capital of large bank was shown in supporting the banks stay strong in the bad debt era that was caused by the financial crisis, while small banks were required by the State Bank to restructure. Within 2013 and 2014, series of M&A were conducted; within that, some of small banks merged to survive; others were seeking support from non-financial group, and a large number ask to be acquired by Large Bank. The focus of the M&A heat currently is the attendance of three out of four main banks, including VCB, BID and CTG, in this trend. In other words, the rise of commercial banks could be considered as having potential, while the domination of the four state-owned banks would be probably remained at least through this difficult period.

In summary, Vietnam Banking Market is high concentration yet dispersion with the ruling of the state sector and the growth of the commercial part. Nevertheless, the system, though has been activating in a long history, implies high finance risk and is easy to be influenced by external changes. The financial crisis from 2008 proved this statement clearly. The four state-owned banks, with supports from government, are on the way go through the storm and dominate the market; whilst a not small quantity of small banks is on the way towards bankruptcy and merged by large banks. However, this crisis is also the chance for the system to eliminate weak participants and hand the gift to survivors. In other words, while the main banks have to carry their own bad debts in addition to those brought from M&A activities, the potential development of the joint stock commercial sector could be seen in the quality aspect and at one point could

probably break the ruling of the state sector. These characteristics have quite big influences on bank's main customer, non-financial firms, which is described in the final part of this chapter.

2.3. The impacts of financial crisis on enterprises in Vietnam: constraints in bank loan's accessing, Government's support and results.

Similar to the general trend of the economy, Vietnamese Companies has remarkable developments over years. According to the statistics of Vietnam Chamber of Commercial and Industry (VCCI) in 2014 (cited in Le Thuy, 2015), the number of companies operating was 401,000, which increased by more than 6 times in comparison with 62,908 companies in 2000. The most impressive growth is from the private sector. In the period 2000 to 2008, revenue of this sector rose by 16 times, while the profit increased by 27 times and total assets grew by 24 times.

The whole economy is divided into three main sectors: Agriculture and Maritime, Industrial and Construction, and Service. These main categories are also separated in smaller economic departments. Among those, Manufacturing Industry plays the most important part when it occupies top numbers in all three indexes of Percentages of Business' Quantity, Labor and Capital.

Figure 2.3.1. Percentage of Economic Sectors in Business's Quantity, Labor and Capital in 2010

Category	Percentage of Business' Quantity	Percentage of Labor	Percentage of Capital
Agriculture and forestry	2.67	3.14	0.76
Maritime	0.49	0.44	0.08
Manufacturing Industry	***16.26***	***43.12***	***16.96***
Construction	15.36	17.02	13.86
Trade	39.09	14.15	13.94
Hotel and Restaurant	3.53	1.97	1.21
Logistic	6.37	6.16	3.59
Finance	0.73	2.15	31.46
Technology	0.08	0.03	0.02
Asset Business and Advisory	12.36	5.42	11.34

Source: Vietnam Chamber of Commerce and Industry (2012)

Aside from business fields, Vietnam Enterprises are also categorized based on their scale into Small and Medium Enterprises (SMEs) and Large Enterprises (LEs). According to Vietnamese Government (2009), the criterion of identifying SMEs is based on the Total Capital (Total Assets on the company's Balance Sheet (priority)) or average quantity of heads as below. Others than those are classified as LEs.

Figure 2.3.2. Criterion of identifying Small and Medium Enterprises

Scale	**Microeconomics**	**Small Enterprises**		**Medium Enterprises**	
Area	**Head Number**	**Total Capital**	**Head Number**	**Total Capital**	**Head Number**
I. Agriculture and Maritime	10 or less	20 billion or less	from more than 10 to 200	From more than 20 billion to 100 billion	From more than 200 to 300
II. Industry and Construction	10 or less	20 billion or less	from more than 10 to 200	From more than 20 billion to 100 billion	From more than 200 to 300
III. Services	10 or less	10 billion or less	from more than 10 to 50	From more than 10 billion to 50 billion	From more than 50 to 100

Source: Vietnamese Government (2009)

According to General Statistic Office (n.d) and Nguyen, T.V. (n.d), LEs take account of only below 5% of Vietnam Enterprises, but have been hiring around 50% of labor force and contributing 60% to the country's GDP; while SMEs occupied over 95% the total number, but are hiring the same volume of labor force and contributing less than LEs do to GDP.

However, as analyzed in the previous parts, non-financial companies in Vietnam were the main object which was badly affected by financial crisis due to the collapse of their main market of UK and America. As a result, the number of business went bankruptcy continuously increased over years. According to General Statistic Office (2014), the number of enterprises went bankruptcy or stop activating in 2013 was 60,737, increased by 11.9% from the number in the previous year and by 12.5% from 2010. The figure in

2014 was 67,823 (General Statistic Office, 2015). General Statistic Office also released the reasons for this increase including long-term loss (56.4%), being unable to access capital or markets (38.5%), and lacking of management skills (5.1%). The result of Vietnam Business Insight Survey cited in VCCI (2012), the breaking point of the crisis, also showed that 28.6% of bankrupted companies could not find a market, 21.4% could not borrow money, 17.9% due to the high cost of inputs (See Appendix 6).

From the light of the above figures, it could be concluded that capital is one of the most difficult issues that Vietnam Enterprises have had to face. As mentioned in the part about the Banking system and Introduction, Bank has been playing the key role in financing capital of companies in the country. However, after the financial crisis, this resource became less available. The reason is banks have been tightening the requirements for loans, that according to a banking manager (Minh Phuong & Duc Nghiem, 2014), to prevent from bad debts. The first aspect to be constraint was interest rate, which has been set at a very high level that was stated by Nguyen Hai (2010) and Le Chi (2015) to be “exceeding profit earned by companies” and “out of companies ‘arm”. Secondly, banks also tighten the mortgage evaluation by downing the value of assets (Duc Nghiem, 2013) to even lower to 30% of the previous value as in Nguyen Hai (2010). To explain about it, banks argued that for mortgage that is real-estate based, housing and land have low liquidity and strongly fluctuate in price during the depression; hence, their value should be measured as the market’s price, and after 2010 the assets lost value when the real estate market was cool down (Duc Nghiem, 2013).

Moreover, the amount that banks lend currently downed to only 60%-70% of the evaluated value of the mortgage, not mentioning that during the lending period, banks will re-consider the loan, and if necessary, more assets will be required to add into mortgage (Duc Nghiem, 2013).

Understanding the difficulties of enterprises in accessing capita, Vietnam Government has issued monetary policies to support them. First and foremost, State Bank of Vietnam has continuously reduced the control rate, which in turn, helped to down the lending rate of commercial banks from 20% in 2011 to 12-13 % in recent year. The government also released the Decree number 131/2009/QD-TTg which considered projects in manufacturing, service and trading to beable to borrow money at 4%/year (Nguyen, H. H., 2009 &VNBA, 2011). This, along with the deficit spending budget of VND 17,000 billion, allowed companies in Vietnam to access the capital of VND 420,000 billion according to Nguyen, H.H (2009). To SMEs particularly, Government formed the SMEs Development Fund which allows the small and medium companies operating in prior business fields of the fund, regulated by Ministry of Planning and Investment, to get loans at the rate of 90% the commercial lending rate (AED, n.d). By these approaches, Vietnam Government expects to support enterprises in facing difficulties of capital and expanding their business.

However, the result until now was not optimistic as the government expected. Firstly, despite the huge declination of 10% over years, the lending interest rate of 8%-10% is still considered to be much higher than profit of companies (Le Chi, 2015). Moreover,

banks seem to play “trifling skill” in this aspect by setting the initial rate at 5-8% to long-term loans but adding the condition of adjustment after 6 months to the deposit rate plus 3-4%; as a result, companies have to choose between paying the loan in advance and accepting the high rate (Minh Duc, 2015). Nguyen, V.L (n.d.) also agreed about this point and, in addition, showed that the difficulty moved partly from interest rate to lending condition. In details, in the situation of bad debt blooming in the system, banks were tightening the requirements regarding to mortgage, function, and lending history, especially to companies who used to borrow from them and still have un-paid debt. At the next stage, according to one survey conducted by Vietnam Development Forum and National Economic University and cited in Hanoi Agency of SME Support (n.d.), the ability index of accessing bank loan of companies with large chartered capital was 2.56, while those of SMEs and other companies were 3.01 and 2.93 respectively. This means that the larger the scale of the company is, the easier its ability of getting bank loans. Another survey by Vinasmes in 2013 cited in Thuy Ha (2014), 32.38% of SMEs participated could borrow banks, while 35.24% of the participants said it’s difficult and the rest said it’s impossible to access capital; at the same time, finding the finance from issuing stock or treasury are nearly beyond the ability of SMEs.

In conclusion, from the light of the facts above, it’s apparent that companies in Vietnam are in troubles of financing their activities, while their main “sponsor” – banks – seems to be in higher position in the interaction. In addition, there are differences appearing between the situation of SMEs and LEs. Hence, the research is to evaluate the

relationship between banks and companies, as well as make the comparison between SMEs and LEs; which are mainly conducted based on one of the most important sector of Vietnam Economy – Manufacturing and Processing.

Manufacturing and Processing Sector

In 1996, Vietnam Communist Party set the long-term target of the country's economy as "becoming an industrialized country in 2020". Though until now the norms of "an industrialized country" haven't been decided yet, the growth of Manufacturing and Processing Sector is always considered as one of the criterions (Le, X.T, 2015). According to Breu, Dobbs, Remes, Skilling, and Kim (2012), this sector contributes around 30% to GDP and followed a growing trend from 2005 to 2010; hence it played a key role into the growth of Vietnam Economy during this period. The sector is also considered as an attractive point to FDI in Vietnam and has very high growth rate in the exporting activities of the country. However, the crisis have highly effected on manufacturing and processing companies because of its activating scale in the local market as well as in exporting. According to Nguyen, D.C., (n.d.), domestic demand to the field decreased by 62%, while external demand went down by 25%. Moreover, 58% of companies in the sector have faced to the difficulty of collecting the inputs. As a result, the inventory index of the sector has continuously went up; in 2014 it increased by 10% in comparison with in 2013 and by 20.1% compared to in 2012 (General Statistic office, 2015). Along with the difficulty in accessing capital, number of

manufacturing companies went bankruptcy over years was not small, according to Nguyen, T. (2014).

However, despite of the above issues, manufacturing and processing field is still considered as the priority in the Project of Industry Development, in which, in 2020, the Industry and Construction zone will occupy 45% of GDP of the country, and Manufacturing and Processing will take 87-88% value of this zone according to Rule 73/2006/QD-TTg by Prime Minister. The interesting point is according to the consideration of General Statistic Office (2015), this sector has clear signal of being recovery with the growing tendency of the manufacturing and consuming indexes. In addition, it still keeps the attraction to investors when the FDI flowing in to the field occupied the leading position in the economy (Xuan Than, 2014). In other words, the manufacturing and processing companies did have to face the difficulty caused by the crisis and banks, but it has alternative choice in other financing, so it's a good chance to research about the relationship between banks and companies in the field as well as with their alternative financing choices.

To conclude for the whole chapter, the difficulties of Vietnamese companies, especially in accessing capital should be considered deeply and carefully. In the next chapter, the review on the academic field about the similar situation would be described to figure out a model to evaluate the issues in Vietnam.

CHAPTER 3: LITERATURE REVIEW ON BANK MARKET POWER AND ITS RELATIONSHIP TO TRADE CREDIT OF COMPANIES.

This chapter firstly will introduce the main methods which are used popularly in Market Power Measurement and the chosen approach in the case of Vietnam. Follow this, the relationship between Bank market power and trade credit in previous researches would be considered.

3.1. Bank Market Power Measurement and Comparison in Bank Competition between SMEs and LEs:

Banks, holding the cash flow of an economy, are considered to be the blood vessel of a country (Krakowski, 2014). In addition to that, the high dependence of corporate in Asia on banks as the main external financing fund was pointed out by previous researches such as Soedarmono, Machrouh, & Tarazi, A. (2011), Taketa (2009) and Ono & Uesugi (2014). Hence, it's necessary to evaluate the market power of these formal financing institutions, which might have strong influence on the interest rate as "price" of products and the availability of credit as "product" to companies as "customers". In the past, Structure – Conduct – Performance (SCP) hypothesis was widely applied in calculating market power. However, over time, several problems regarding to SCP were implied in many researches. At the same time, with the development of accounting and finance

system as well as technology, Lerner Index has become more and more popular as a standard of Market Power measurement (Elzinga & Mills, 2011).

3.1.1. Structure – Conduct – Performance (SCP) hypothesis and its problems:

SCP is actually quite used widely in evaluating competition of one market since some of its indicators such as CR4, CR8, and HHI have been applied in the legislation system of many countries, like USA, Singapore and England, regarding to competition and antitrust. SCP, as its name, is established from three parts: structure of the market, market conducting and the performance of firms in the market. According to McKinsey & Company (2008) the three parts are described in more details as below:

- *Structure:* including the variables that are slow to change overtime such as barriers to entry, number of competitors, growth of demand, and so on. This part is represented by the concentration level of the market.
- *Conduct:* including the variables that are changing more often than in structure and mainly regard to the behavior of customers and suppliers such as pricing and product policies, Merger and Acquisition, technology, and more. Conduct part is somehow the result of Structure part.
- *Performance:* mainly regarding to financial performance of companies. Besides, the growth of the industry is one important result. Performance part itself is the outcome of Structure and particular Conduct part. However, in general, these three parts have the counter interaction to each other.

According to Tu, Dinh and Nguyen (n.d), SCP was first introduced by Mason (1939), in which Mason considered the influence of a firm's size, based on assets, employees or sales, on its competing policies, including price and product. However, Bain (1951) was the first research to define the notion of industry's concentration and its measurement. According the research, one market could be (1) "highly concentrated" under the control of few firms, (2) "less concentrated" under the control of more or not large number of firms, and (3) "atomistic structure", meaning none of firms have the control on the market. Among these three conditions, Bain (1939) argued that firms holding power in cases (1) and (2) normally set the price at higher level than those in case (3). Hence, it's important to measure the concentration level of an industry, since it will show the position of suppliers and customers in transactions of one product. Bain (1951), from the definition of industry, gave the measurement of concentration as:

"…the proportion of the combined production volume of such a group of close substitute outputs supplied by one, four, eight, or twenty firms".

From then, SCP was used widely in empirical studies in researching the relationship between the concentration ("Structure") of an industry and behavior ("Conduct") and results ("Performance") of firms in the industry. Market power or in this theory called the concentration level is measured by concentration ratio, which is identified as the total market share of several firms in that industry. In addition to that, the Four-firm concentration ratio (CR4) was also applied in antitrust legislation, which the percentage of the top four firms' sale in industry over 50% is the signal of an "oligopolistic industry"

(Kolb, 2007). However, Van den Bergh and Camesasca (2001) claimed two significant shortages of CR4 that it doesn't take into account either the relative size among the top four firms or the market share of firms who are under top 4. Therefore, to make good these shortcomings, Herfindahl-Hirschman Index (HHI) was introduced and replaced CR4 in the Antitrust Legislation of America, especially in Merger and Acquisition activities. In short, HHI is calculated as the sum of market share square of every individual company in the market (Van den Bergh & Camesasca, 2001) and varies from 0 to 10,000 with the concentration increasing. According to U.S. Department of Justice and Federal Trade Commission (1982), HHI below 1,000 means the market is not concentrated; HHI from 1,000 to 1,800 means the market is moderately concentrated, and HHI above 1,800 means the market is highly concentrated. This indicator is also widely applied in many empirical studies such as Prager & Hanna (1998) to examine the effect of US banking merger, causing the increase in concentration, on price or Cetorelli & Strahan (2006) to test the influence of bank competition on the structure of non-financial firms, specialized in the ability of accessing credit and influencing the firm entry of established firm.

Nevertheless, HHI contains several drawbacks. The first one is, which is cited as its advantage compared to CR4 according to Calkins (1983), HHI combines the market share of "every firm", including those that are not significant to the result of the index though taking time and money to collect the data. Secondly, Calkins (1983) indicated one serious problem that just small odd in evaluating the market share of large firms

could result in the large error in HHI, which might lead to a significant change in the final conclusion of researches.

In addition to that, one important point for all SCP indexes is the definition of “market” to evaluate market share. Perrot-Voisard and Zachmann (n.d.) even called HHI as “an irrelevant indicator without a relevant market”. The drawback is that until now the market is defined geographically, which according to Rezaee (2004) is irrelevant since, particularly to financial market, the product is provided in a wide range beyond the boundary of county and now out of nation. Hence, it’s difficult to identify the geographic market of a product.

Moreover, according to Berger, Demirgüç-Kunt, Levine, and Haubrich (2004), the concentration level itself is not enough to reflect the competition of one market. Despite the fact that large banks have competitive advantages in for example capital, employees, technology and scales, small banks still could compete in the market by other aspects like “soft” information and connection.

In conclusion, though HHI and other SCP indexes are still applied in the legislation system of many countries, they have become less popular in researches about competition than before due to their drawbacks in the academic fields. In fact several researchers as mentioned in Berger, Demirgüç-Kunt, Levine & Haubrich (2004) used other approaches to research competition and market power. One of the most preferred

methods developed currently is Lerner Index, which will be introduced in the next part of this chapter.

3.1.2. Lerner Index:

As mentioned previously, market power indicates the ability of one or a group of firms to set and keep the price at the level that is higher than it should be under the condition of competition. One method that perfectly reflects the nature of market power is Lerner Index, which is introduced by Lerner, A.P. in 1934. According to the study, the market power of a firm, an industry or a state was identified by the monopoly level of the market, in which the monopolist create its "monopoly revenue" as the differential between the price of maximizing profit and the marginal cost of the firm.

$$L = \frac{P-C}{P}$$

With: L: Lerner Index for Market Power

P: Price

MC: Marginal Cost

The larger the ratio is, the greater the monopoly in the market is. In other word, MP=0 means the market is perfectly competitive, while MP=1 means one firm or the state totally controls the market of one commodity.

Lerner Index actually was introduced as a standard of evaluating market power in economic textbooks (Elzinga & Mill, 2011). HHI itself, following the argument of Tirole (1988), is determined as one component to calculate Lerner Index that under condition of marginal cost remaining constantly and no capacity constraint , L = HHI /ε with ε as the elasticity of demand.

Despite of its popularity theoretically, one problem causing its limited application in reality is the difficulty of calculating its components, especially Marginal Cost (OECD, n.d.). Hence, the proposal is to calculating MC directly from the short-run changes of outputs and inputs in the industry (Oliveira Martins, Scarpetta, and Pilat, 1996). One common method is translog cost function that has been used in many empirical studies in the banking field such as Maudos & de Guevara (2007), Berger, Klapper, & Turk-Ariss (2009), Carbó-Valverde, Rodríguez-Fernández and Udell (2009) and Ariss (2010). The general translog cost function was provided by Ray (1982) as below:

$$lnC = lnk + \sum_{i=1}^{m} lnq_i + ½ \sum_{i=1}^{m}\sum_{j=1}^{m} d_{ij} lnq_i lnq_j + \sum_{r=1}^{n} b_r lnw_r + ½\sum_{r=1}^{n}\sum_{s=1}^{n} f_{rs} lnw_r lnw_s + \sum_{i=1}^{m}\sum_{r=1}^{n} g_{ir} lnq_i lnw_r + hT$$

With *C* as the overall cost of running a firm, *q* as the output and *w* as the input.

These above researches about banking are similar in identifying the output as total asset of banks and the inputs as labor, fund or deposit and physical/fixed capital. From the application of these variables to the translog cost function above, the researchers could calculate the marginal cost and, hence, Lerner Index. Each of the studies used this

indicator in several ways. Maudos and de Guevara (2007) using interest rate as the price to evaluate the market power in banking market in the relationship to the efficiency. The findings were that the market power toward the borrowers was increased while that toward the depositors moved in the opposite direction. Ariss (2010) figured out that the Lerner Index in banking system in developing countries all over the world was around 30% in general and put this number into the relationship with the stability and efficiency of bank. On the other hand, Berger, Klapper, and Turk-Ariss (2009)proved that banks possessing high level of market power have less overall risk though their risk in the loan portfolio could be higher than of those with low market power. Carbo-Valverde, Rodriguez-Fernandez and Udell (2009) tested the market power by not only Lerner Index but also HHI to suggest that Lerner Index is better than the other in this calculation.

However, Lerner Index also contains several issues that, aside from the unfeasibility of evaluating the margin cost, according to Miller (1955), it doesn't take into account the attempt of market pressure or administration on keeping the cost at minimum level based on the existed knowledge about the market.

To summarize, bank market power should be measured appropriately to every single case because both HHI and Lerner Index have pros and cons, and the result of calculation might have strong influence in the final analysis of the research, especially when it is considered in the relationship with an alternative external financial resource to bank loan.

3.1.3. Bank Competition towards the market of SMEs and LEs:

Regardless to the method of evaluating bank market power, one important point needs to be considered is how fierce the bank competition is when their customers are SMEs and LEs.

As mentioned above, many researchers have put SMEs in a vulnerable position that is easily constrained by banks. However, does it mean fewer banks attend the market with SMEs than those in the market with LEs? Beck, Demirgüç-Kunt, and Martinez Peria (2008) implemented surveys across 45 countries both developing and developed and figured out that banks do less expose to SMEs than they do to LEs. SMEs are also offered less loans at a higher rate, despite the statement of banks to highly appreciate the potential profitability of these companies.

In contrast to this "conventional wisdom", De la Torre, Peria and Schmukler (2010) argued that the literature of large banks being not interested in SMEs has a gap with the reality. In fact, every type of banks considered SMEs as the strategic customers and attending the market towards the object. However, the large banks with a wide range of service, technology and capital possess higher competitive advantages.

On the other hand, there are few researches about how hard the competition in bank to LEs is; however, it could be assumed that the competing level seems to be higher than SMEs, since to large companies, according to Cetorelli and Strahan (2006), theses enterprises have other choices as securities or bonds to finance their assets, while SMEs

focus more on banks since their reputation and network are not enough to access the above resources. However, Saidenberg and Strahan (1999) also added to the point that though the importance of banks to LEs has declined due to the appearance and development of other institution in financial market, large companies still go to banks because of the reliability and stability of this resource.

3.2. Literature Review on the relationship among bank market power, bank loans and trade credit:

As mentioned above, bank market power directly affectsthe product of the market - bank loans. The question is whether this relationship is negative or positive. To answer this question, many previous studies have been conducted and given a fierce debate.

One side of the debate, as cited in Carbó-Valverde, Rodríguez-Fernández and Udell (2009), is *the traditional market hypothesis*, which argued that the lower the bank market power is, the less constrained the bank credit is, as the high competition forces banks to provide more products (bank loans and services) at low price (e.g. interest rate) to customers. One empirical supporter of this argument is Beck, Demirgüç-Kunt and Maksimovic (2004). The research used concentration ratio as the market share of the three large banks in a country to be the measurement of bank competition. The interesting point is the research proved not only the positive relationship between bank concentration and the financing obstacles in companies but also the influence of ownership and the intervention of government in banking system on this relation. In more details, in countries where the government’s interference was highly available and

state-owned banks occupied large market share, the positive effect of bank concentration on financing constraint became aggravate. In addition to that, the obstacles tended to increase when the object moved from LEs to SMEs.

Another empirical study in this side is Cetorelli and Strahan (2006). Using HHI as the measurement of bank competition, the research looked deeply at the relation between the market power of bank and the financial barrier it created towards small firms and large firms in U.S. The resultwas, following the *market hypothesis*,firstly the tough competition in banking system increased the ability of accessing credit to small firms, creating the growth of established firms among SMEs. At the same time, the change in level of competition didn't affect the existed establishments, because they had a wide range of choice from financial market rather than bank loan.

The *market hypothesis* is also supported by researches using Lerner Index as bank market power measurement. Love and Pería (2014) studied on the data of 53 countries to prove that high competition with low Lerner index produces credit availability. However, at the same time the research also indicates that this relationship naturally depends on the efficiency of information sharing system, especially private credit bureau. This somehow relates to the *information hypothesis*.

By contrast, the *information hypothesis*, as cited in Carbó-Valverde, Rodríguez-Fernández and Udell (2009), stressed on the "lending relationship" between banks and borrowers. Supporters of this opinion argued that in a market with few competitors,

banks tend to invested on the connection to its customers, resulting in more bank credit available. The first empirical study on this aspect, according to Carbó-Valverde, Rodríguez-Fernández and Udell (2009), was Peterson and Rajan (1995). The research built the first model about the lending relationship based on the expectation of bank on sharing the potential development of companies in the future. In a highly competitive financial market, this expectation is not so high. Along with this, if the company is small, leading to some uncertainties in its current condition, banks might probably have to give it bank loans at a high rate or even restrict the credit accessibility. The company could not get help when it needed, making the lending relationship becomes worse. Round and round, the credit availability might not turn to be improved. The research used HHI as the measurement of the competitive level of the market and proved its above opinion to conclude that in a high concentrated market, credit are more accessible to firms. Thought the research was conducted on the data of small enterprises, the authors also confirmed that the result was not specific to this object but also could be applied on large firms.

Another study, which was conducted outside USA, was Fischer (2000) with the data of German Manufacturing companies. The research went into more details in proving that when the market is more competitive, lenders tend to acquire less information of its customer than they do in a concentrating market. Similar to Petersen and Rajan (1995), the final result is that when the company is in a liquidity shock, less bank credit is available from banks in the competitive market than in a concentrated market. The measurement of competing level was HHI.

The interesting point was in Carbó-Valverde, Rodríguez-Fernández and Udell (2009) when it applied both Lerner Index and HHI to test which *hypothesis* the relationship between financial constraint towards SMEs and bank market power in Spain followed. While the result of using Lerner Index is *market hypothesis* with the positive relation between bank market power and financial constraints, HHI gave the result of *information hypothesis* with negative relation. Nevertheless, this contrast could be reconciled by controlling elasticity of demand, bank's information investment and the barrier of entry towards new banks. The final conclusion supported the *market hypothesis* but involve *information hypothesis* in the effect of information control on the final decision of banks.

From the above discussion, it's clear that in each particular situation the prediction is different. In addition, those who conducted the research by using Lerner Index and gave the result supporting *market hypothesis*, such as Carbó-Valverde, Rodríguez-Fernández and Udell (2009) and Love and Pería (2014), used the data mainly based SMEs, while LEs should be studied in the same treatment. Hence, it's necessary to have a research on both SMEs and LEs, especially in the current period when the financial crisis affects badly on the activities of banks and leads a serious shortage in bank loans.

The next stage is about the relationship between bank loans and trade credit. The question is, why Trade Credit? In fact, this method was considered to be far more expensive than other financing resources, that according Yang (2011), one payable amount of "2/10, net 30", meaning the company will get 2% discount if it pays within 10

days or pay the full amount from day 10 to day 30, could be calculated as having 44% of one-year interest. To explain about the role of trade credit, Ferris (1981) emphasized that trade credit is substitute to money in general in the case it could be transferred – showing its convenience as an intermediary. Though in fact it is not transferable, Trade Credit is widely used to reduce the transaction cost by separating goods and money in the transaction and becoming a "hedging mechanism" in trading flow. From the perspective of suppliers, trade credit is preferred due to several reasons, as cited in Klapper, Laeven,and Rajan (2011), involving price policy and customer relationship and allowing clients to be guaranteed about goods' quality. Moreover, from sellers' aspect, according to Petersen and Rajan (1997), the information about firms of suppliers is different from those used by banks. The advantage of the former is punctuality, which can help suppliers to identify which companies are in loss situation but having future potential and which companies are in danger. This is the reason why trade credit is offered to firms who are restricted by financial institution.At the same time, the role of providing essential materials for operating of the company allows its supplier to be able to collect the loans more easily than banks do.

On the angle of customer, according to Yang (2011), the reason for the company to choose Trade Credit in the crunch time might beit simply helps the company to go through the liquidity shock while the company is constrained by banks, as said Nilsen (1999) it's "readily at hand" or Petersen and Rajan (1995) it's easier to access compared with formal credit. Yang (2011) also show the statistic of U.S. Federal Reserve that trade credit takes

account of around 20% of total liabilities of non-financial non-farm companies. The number in Germany, France and Italy is 25% and in United Kingdom is 55%.

Calomiris, Himmelberg, & Wachtel (1995) gave an explanation of choosing Trade Credit during Credit Crunch period. Firms studied by the research were high-quality-in-finance firms (as that time “commercial paper” – notes payable – was issued selectively to strong-finance firms), hence there was no reason for them to be restricted by banks. However, the companies were proved to use trade credit to finance the unexpected increase in their inventory firstly and secondly to act as an intermediary toward their customers, who were actually constrained by bank. This systematic characteristic was also tested by Bastos and Pindado (2013) in the credit crunch 2008, in which an enterprise (A) that was holding high level of accounts receivabletended to delay payment to its suppliers (B) to avoid credit risk. The reason of high level of Accounts receivable in enterprise (A) might be either its customers were in the same situation, or its clients were restricted by banks and/or other financial institution and in a risky position of financing. In other words, the result of these two studies could be interpreted that the substitute relation between bank loans and trade credit eventually starts from the most risky firms, who are constrained by formal financial firms, and spreads to their suppliers like a “contagion in the supply chain” as called by Bastos and Pindado (2013).

Moreover, as said by Nilson (1999), previous researches tended to prove the constraint in financing by using data from SMEs, while larger firms might eventually be in the same situation. The study proved that not only SMEs but also LEs without a mark of

quality guarantee were cut down credit by bank loan, hence they moved to trade credit as an alternative resource.

From the above discussion, it could be conclude that Trade Credit substitutes for bank loans, especially in the period of credit crunch. Nevertheless, while most of the researches were conducted on the direct relationship between bank loans and trade credit and between bank market power and bank loans, just few studies have researched on the connection between trade credit and bank market power. In fact, the only empirical research was Carbó-Valverde, Rodríguez-Fernández and Udell (2009), where Trade Credit is assumed to represent the financial constraints of companies as the higher trade credit used is the signal of the company to be more restricted by banks, and similar to previous research, it looked at SMEs only. In fact, the relationship should be look deeply on the aspect that how the market power of the most important sponsor affects the decision of using an alternative resources of the company, and it should be researched on both LEs and SMEs because in this crisis period, the difficulty is not an exception to anyone.

Hence, the next chapter will describe the methodology which is built based on the light of the empirical researches above to analyze the situation in Vietnam toward both SMEs and LEs on how to calculate bank market power to reflect competition in the system and the relationship with firms and how it affects the decision of companies on using trade credit.

CHAPTER 4: METHODOLOGY OF CALCULATING BANK MARKET POWER AND ANALYZING ITS RELATIONSHIP TOWARDS TRADE CREDIT USED BY COMPANIES.

In this chapter, firstly the hypotheses that are set up based on the academic review and the situation of Vietnam would be provided; following that is the data collection's approach that ensures the representative of the sample. Finally, the methodology of how bank market power is calculated and how the empirical model is built are described in the last part of the chapter.

4.1. Hypotheses:

The current situation in Vietnam is, as analyzed above, the financial market has been not developed enough yet, so bank is still playing the main intermediary toward both SMEs and LEs. Nevertheless, from the discussion above in the academic fields that the large bank is easier to expand the covering scale with their capital and technology advantages and from the real distribution of banking system in Vietnam with the focus on big cities of small banks and wide spread of large banks over small provinces, it seems that SMEs have less choice than LEs do. This probably means the competition in banking service to LEs is tougher than to SMEs. Hence, the first hypothesis regarding to market power in comparison between SMEs and LEs follows the traditional trend as below.

H_1. Market Power of banks when working with Small and Medium Enterprises is higher than when working with Large Enterprises.

After testing the first hypothesis, the main dependent variable as Bank market power is provided. Based on this calculation, the second hypothesis is set up. According to the general nature of Vietnam Banking system of containing a large number of banks, yet having high concentration and high level of government interference and to the academic review, mainly Beck, Demirgüç-Kunt and Maksimovic (2004) and -Valverde, Rodríguez-Fernández and Udell (2009) along with other researches on the substituting relationship between trade credit and bank loan, the second hypothesis follow the traditional *market hypothesis* as below:

H_2. High level of Bank Market Power leads to the increase in using Trade Credit of non-financing companies. This influence on SMEs is stronger than on LEs.

To test these two main hypotheses, the research will analyze the data collected from Manufacturing and Processing Companies. The method of collecting data is described in the next part of the chapter.

4.2. Data sampling:

As mentioned above, the research is conducted on listed companies in Manufacturing and Processing sector of Vietnam. There are 274 companies in this sector listed in Hanoi Stock Exchange (HNX) and Ho Chi Minh Stock Exchange (HOSE). Firstly, due to the regulation of possessing at least VND 30 billion of authorized capital to be able to list on these two stock exchanges, just a limited number of SMEs is listed; moreover, most of them are quite young. Hence, to conducted the analysis in the period from 2008 – 2013,

the size of sample for SMEs companies is 46, which includes all companies with total assets fewer than VND 100 billion within at least three years and listed from 2008. In fact, those companies could be considered to represent for the SMEs because they occupied the large percentage of total assets among SMEs.

To making the comparison to SMEs, the data of LEs must be consistent and comparable to the data of small companies. Due to the large number of LEs listed on stock exchange, cluster sampling method is applied. Firstly, the selected SMEs are divided based on their operating field according to the line of economics system issued by Vietnam Government (2007). To make it parallel to SMEs' data, listed LEs is divided in similar lines. From each line, LEs, to ensure the representative geographically, are separated into ones in HNX and ones in HOSE. From each sub-unit in one line, the large companies selected include both those with top volume of total assets and those with relatively low value of total assets. Hence, the final sample is 46 companies from 10 lines of economics in Manufacturing and Processing Sector selected from each side and 92 companies in total.

4.3. Data collection:

The thesis is conducted on secondary data. All variables are directly collected and calculated from the annual financial statements of companies, which are audited by independent external audits and issued according to the requirements of State Securities Commission of Vietnam. The reason for this collecting method is those data is not systematically available in any database in the country.

It's important to be noted that the empirical research is on the relationship between trade credit used of companies and bank market power, hence, the data for calculating bank market power is also taken out from the financial statement of the companies. In more details, each company will be identified to work with which banks in which area. At the end, bank market power in one destination (one province) is calculating based on banks who operating in that area[1]. The data of this calculation, in turn, is withdrawn from the annual consolidated financial statement of banks in the whole country instead of the separated statement in one province. The reasons for this are firstly according to Rezaee (2004) the nature of going beyond the boundaries of financial products in the current internet era and secondly of the unavailability of the data. It should be noted that each province is assumed to contain five main banks of Vietnam including Bank of Investment and Development (BIDV), Technology and Commercial Bank (Techcombank), Commercial Bank for Foreign Trade of Vietnam (Vietcombank) and Commercial Bank for Industry and Trade (Vietinbank), and Agriculture and Development Bank (Agribank). The reason for this assumption is the survey of KPMG (2013) on the wide activating range of these banks in Vietnam.

[1]This excludes the data of Foreign Banks due to the shortage of data. However, due to their small market share and operating scale, according to VPBank Securities (2014), the omission is assumed to not significant affect the result.

4.4. Methodology of analysis:

Before mentioning the empirical model, the approach to calculate the key factor of the model, bank market power, to test the first hypothesis on the comparison between SMEs and LEs should be described.

4.4.1. Bank Market Power:

As mentioned in the literature review, there are several methods that could be applied to calculate bank market power, whichincludeLerner Index and HHI. According to above analysis of their props and cons, Lerner Index seems to more suitable to be applied in calculating Bank Market Power in Vietnam. The first reason is the financial products nowadays are not limited in one area, resulting in an extreme difficulty in indentifying "Market" in HHI. Moreover, Vietnam Banking system is very clear to be highly concentrated with the domination of State-owned banks, yet the rise of private banks in both quantity and quality should not be ignored. Hence, HHI is not sufficient because its equation of different competitive advantages in large and small banks. Finally, the shortage of database is one important point for the case. As a result, Lerner Index is applied in the thesis to calculate bank market power in Vietnam.

The standard formula of Lerner Index by Lerner (1934) is:

$$L = \frac{P - C}{P}$$

In particular, to apply the formula in Bank Market Power, the study use the model from the empirical researches of Carbo-Valverde, Rodriguez-Fernandez and Udell (2009) and Ariss (2010) with P (Price) as the Total Revenue over Total Assets and C (Marginal Cost) as the result of Translog Cost function of one output (Total Assets) and three Inputs (Labor, Deposit, and Physical Capital). Nevertheless, none of these researches went into details about how the translog cost function is used, so the study applies the function and its principles introduced by Ray (1982) as mentioned in the literature review into banking market as the specific below formula:

$$lnC = \alpha_0 + \alpha_1 x\ lnTA + \tfrac{1}{2} x\ \alpha_2 x\ (lnTA)^2 + \alpha_3 x\ lnD + \alpha_4 x\ lnK + \alpha_5 x\ lnL + \tfrac{1}{2} x\ \alpha_6\ x\ (lnD)^2 + \tfrac{1}{2} x\ \alpha_7 x\ (lnK)^2 + \tfrac{1}{2} x\ \alpha_8 x\ (lnL)^2 + \alpha_9 x\ lnD\ x\ lnL + \alpha_{10} x\ lnK\ x\ lnL + \alpha_{11} x\ lnD\ x\ lnK + \alpha_{12} x\ lnTA\ x\ lnD + \alpha_{13} x\ lnTA\ x\ lnK + \alpha_{14} x\ lnTA\ x\ lnL. \quad (1)$$

C: Overall cost to run a bank, including Interest Expense, Service Expenses, Operating cost, Cost of Allowance for Doubtful Loans, and Tax Expense.

TA: Total Assets of the bank.

D: Total Deposit from customers, including both non-financial and financial, to banks

K: Physical Capital of the bank, identified as Fix assets from its financial statement

L: Labor, identified as the total cost for labor including wage, health and social insurance, training cost, and other relevant expenses regarding to employees. In several banks in

some years when the number was not available on financial statement, it was considered to take account of 51% of the total operating cost, as identified in KPMG (2013).

According to Ray (1982) since this function is sensible, it must be homogenous of degree 1 in input. From that, the other functions requires are:

$\alpha_3 + \alpha_4 + \alpha_5 = 1$ (1.1)

$\alpha_6 + \alpha_7 + \alpha_8 + \alpha_9 + \alpha_{10} + \alpha_{11} = 0$ (1.2)

$\alpha_{12} + \alpha_{13} + \alpha_{14} = 0$ (1.3)

From these formulations, using the data collected and Eviews software at One Stage Least Square method, the parameters $\alpha_i$are identified. Ray (1982) recommended the formulation to calculate Marginal cost for each Q as

$$MC = \frac{\partial lnC}{\partial lnTA} \, x \, \frac{C}{TA}$$

In which, $\frac{\partial lnC}{\partial lnTA} = (lnC)'_{lnTA}$

Keeping other variables constant, from (1)

$(lnC)'_{lnTA} = \alpha_1 + \alpha_2 \, x \, lnTA + \alpha_{12} \, x \, lnD + \alpha_{13} \, x \, lnK + \alpha_{14} \, x \, lnL$

Hence, $MC = \frac{C}{TA} \, x \, (\alpha_1 + \alpha_2 \, x \, lnTA + \alpha_{12} \, x \, lnD + \alpha_{13} \, x \, lnK + \alpha_{14} \, x \, lnL)$

This final formula was also provided by Berger, Klapper, & Turk-Ariss (2009). The value of lnTA, lnD, lnK and lnL will be the mean of each variable in an area in each

year. Applying the result of MC into the Lerner Index formula along with Price gives the final outcome of Bank Market Power.

In final stage of testing the first hypothesis, the *paired-sample t test* is used to check the statistic difference between SMEs and LEs.

4.4.2. The empirical model on the relationship between Bank Market Power and Trade Credit used by companies:

After testing the first hypothesis, the relationship between bank market power and trade credit use of companies will be analyzed by using simple regression. In order to form the model, excepting Bank Market Power that was calculated from the first part, other variables are identified from previous theories and calculated from financial statements. To check multicollinearity among variables to get a strong model, the matrix of Pearson correlation coefficientis built among independent variables. The expectation is the coefficient among exogenous variables should be near to 0. Finally, due to the purpose of the research to compare one situation between SMEs and LEs, the selected model should have highest R^2 and R^2 adjusted and lowest p-value of variables in the result of both cases. Though the significant level of the statistic testis traditionally set up at 5% and could be considered as acceptable at 10% or below depending on analysis, due to the comparable purpose of the thesis, some variables could be significant in one case but might not be in others; this could be considered as a difference in findings. Follow this part is the list of variables and the reason why they should be included in the formula.

4.4.2.1. Dependent Variables:

As mentioned above, the research studies the relationship on trade credit and bank market power, hence, the endogenous variable is trade credit. However, according to the definition by Ferris (1981) as in Introduction part, trade credit includes both Accounts Payable toward suppliers and the amount paid in advance by customers. To make it clear and comparable in case of Accounts Payable with or without customer's pre-paid, there are two endogenous variables as below:

Account Payable:The amount that a company owes its suppliers only and that is recorded under the same name in financial statements.

Trade Payable: The amount that a company owes from other institutions than banks and formal financial firms. It is the summary of Account Payable (reported in the credit side of *Accounts Payable*) and Payable to Customers (reported in the debit side of *Accounts Receivable*)

4.4.2.2. Independent variables:

These below independent variables are based on previous theories. Aside from Bank Market Power as the main exogenous variable, to answer the question 3 of identifying which other factorseffect on the decision of using Trade Credit, a group of independent variables is included and divided in external and internal sub-units.

Bank Market Power (BMP): this is the main independent variable of the model, to evaluate the influence of the most important financing institution towards one internal

decision of choosing one alternative external resource to bank loans. As mentioned above, the condition in Vietnam seems to support the market hypothesis that higher bank market power produces more financial constraints, which result in the increase in using trade credit. This effect is expected to be the same towards both SMEs and LEs.

Number of banks in area (NoB): besides from BMP, Number of banks operating in one area (province) is used to support the hypothesis about bank competition, as the more banks are running in one destination creates higher competition with more services offered, therefore, downing the financial constraints. This seems to affect SMEs and LEs in the same direction.

Bank Return on Assets (BROA): This factor is in the external group. Recommended byCarbo- Valverde, Rodriguez-Fernandez and Udell (2009), this factor reflects the performance of Bank. The expectation is that when the bank is good at its performance, it tends to ease the lending requirements; hence, companies use less trade credit. This influence seems to be similar to both SMEs and LEs.

Bank Inefficiency (BI):This factor is included in the external group. According to Carbo- Valverde, Rodriguez-Fernandez and Udell (2009), one bank working inefficiently could tighten its requirement in loans. The variable is calculated as Total Cost/Total Revenue.

Bank Credit Risk (BCR): This factor is in the external group. Though it was introduced by Carbo- Valverde, Rodriguez-Fernandez and Udell (2009), in this thesis it

is different in both formula and meaning. It is equal to Allowance for Bad debt/Net Income. According to State Bank of Vietnam (2013), banks and other financial institutions are required to set the allowance fund for doubtful accounts and adjust the fund every quarter. In detail, bank loans are separated into four groups: (1) standard debts that are able to be collected full principle and interests, (2) Noted debts that are able to be collected full principle and interest, but the customer's payment ability tends to be reduced, (3) Sub-standard debts that are able to not be collected the principle and interest in the expired date, (4) Doubtful debts that are considered to be highly damaged, and (5) Principle-uncollectable debts that considered to be unable to be collected. Banks are required to set the doubtful accounts for debts from group 2 to 5 at different rates. Hence, the high credit risk means banks might contain a high volume of bad debts in its lending portfolio. It might lead to more restriction towards SMEs and focus more on LEs, since as usual LEs is taken as safer customer than the other.

Return on Assets (ROA):This variable is included in the internal group. It reflects the performance of companies and is equal to Net Income over Total Assets. According to Curnat (2007), the performance of a firm is usually used by its supplier as a measurement for it credit reliability. Therefore, the growth normally goes along with higher trade credit, while a large failure results in the down trend of this financial resource. The influence might be stronger on SMEs than on LEs, but the trend is similar.

Firm Efficiency: This belongs to the internal group and is equal to Operating Profit/Total Revenue. It reflects how good the company is in cost control and creating

profit, that according to Carbo- Valverde, Rodriguez-Fernandez and Udell (2009), firms are less efficient in cost management might depend more on Trade Credit.

Current Assets: This is included in the internal group and is the total of cash, accounts receivable and inventory of a company. The positive relationship between current assets and trade credit has been proved in many researches, such as Calomiris, Himmelberg, & Wachtel (1995) and Bastos and Pidando (2013), because the two items are match in term and situation. For example, Haley and Higgins (1973) pointed out that inventory is financed by trade credit partly or fully.

Internal Cash Flow: This is in the internal group and is equal to the total of Depreciation[2] and the earning before other activities than operating (Kaplan& Zingales, 1997). This is the cash flow that the company generated itself from its operations before any external financial resource. It is expected that, according to Deloof and Jergers (1999), this internal resource negatively affect the demand of trade credit as well as other external resource.

In these dependent and independent variables, ones that are the absolute values, including Accounts Payable, Trade Payable, Internal Cash Flow, and Current Assets, are set up in Log form to be consistent in value with other variables.

4.4.2.3. Model Adjustment:

From the above list of variables, the initial model is:

[2] In some cases when the Depreciation is not available, the value of the year is assumed to be equal to the previous year with the assumption of applying the Straight method.

$$lnTP \text{ or } lnAP = \alpha_0 + \alpha_1 x BMP + \alpha_2 x NoB + \alpha_3 x BROA + \alpha_4 x BI + \alpha_5 x BCR + \alpha_6 x ROA + \alpha_7 x FE + \alpha_8 x lnCA + \alpha_9 x lnCF + u$$

This model is based on previous studies on Trade Credit and Bank Market Power. However, each country has its own condition and, hence, produces its particular data. Therefore, the model needs to be adjusted to be suitable to the statement of Vietnam. One of the most important issues of regression model is the multicolineary among independent variables. To avoid this issue, the correlation matrix is applied to figure out the relationship among those. Two variables is considered to be independent when their correlation coefficient is close to 0 and considered to be highly correlated when it is close to 1 or -1. After running the data on Eviews 7, their correlation matrices are shown as below.

Table 4.4.2.3.1.Correlation Matrix of independent variables in the model in the case of LEs.

	BMP	NOB	BCR	BI	BROA	ROA	FE	LNCA	LNCF
BMP	1.00	0.91	-0.56	0.71	0.47	0.12	-0.07	-0.04	-0.12
NOB		1.00	-0.54	0.68	0.38	0.04	-0.07	0.00	-0.11
BCR			1.00	-0.24	-0.35	-0.18	-0.09	0.10	0.02
BI				1.00	0.60	0.02	0.04	0.10	-0.03
BROA					1.00	0.05	0.14	0.10	0.02
ROA						1.00	0.49	-0.15	0.39
FE							1.00	0.02	0.42
LNCA								1.00	0.30
LNCF									1.00

Table 4.4.2.3.2.Correlation Matrix of independent variables in the model in the case of SMEs.

	BMP	NOB	BROA	BI	BCR	ROA	FE	LNCA	LNCF
BMP	1.00	-0.54	0.42	0.03	0.20	0.13	0.06	-0.09	0.06
NOB		1.00	0.35	0.12	-0.67	-0.24	-0.08	0.11	-0.11
BROA			1.00	-0.18	-0.57	0.06	0.08	-0.03	0.00
BI				1.00	0.42	-0.12	-0.06	-0.06	-0.10
BCR					1.00	0.07	-0.02	-0.15	0.01
ROA						1.00	0.56	0.08	0.50
FE							1.00	0.17	0.34
LNCA								1.00	0.27
LNCF									1.00

The two correlation matrices show a very important point that except Bank Return on Assets (BROA), other variables in the external group tend to highly correlated to each other and to the main variable, Bank Market Power (BMP) in both cases of SMEs and LEs. Hence, they could not be used together in the same model. In the internal group, ROA, FE and Internal Cash Flow (lnCF) also show a high correlation to each other. To avoid the multicollineary problem, four variables including Number of banks (NoB), Bank Credit Risk (BCR), Bank Inefficiency (BI), and Internal Cash Flow (lnCF) are withdrawn from the model. In addition to that, ROA and FE will be considered separately in different models.

Hence, the finalized empirical model on analyzing the relationship between Trade Credit and Bank Market Power includes two sub-models with the exchange of ROA and FE as bellow:

$$lnTP \text{ or } lnAP = \alpha_0 + \alpha_1 \times BMP + \alpha_2 \times BROA + \alpha_3 \times FE + \alpha_4 \times lnCA + u \qquad (A)$$

And

$$lnTP \text{ or } lnAP = \alpha_0 + \alpha_1 \times BMP + \alpha_2 \times BROA + \alpha_3 \times ROA + \alpha_4 \times lnCA + u \qquad (B)$$

In summary, the two models of the thesis are built from previous theories with suitable adjustment for Vietnam's case. They will be applied in the data of companies in Vietnam, and the result will be provided in the next chapter, followed by the discussion based on it.

CHAPTER 5: RESULT OF BANK MARKET POWER AND THE EMPIRICAL MODEL.

This chapter will describe the result produced by running the data of Manufacturing and Processing companies in Vietnam through the translog cost function and the empirical model in chapter 4. However, first and foremost the chapter will release the descriptive result of the data.

5.1.Bank Market Power:

5.1.1.Descriptive Result:

In final, companies which were researched on are activating in 31 provinces of the country. It's also found out that both SMEs and LEs highly work with five main banks including BIDV, Techcombank, Vietcombank, Vietinbank, and Agribank.

The difference in the lending market to SMEs and LEs are shown clearly in the number of banks, the volume of their total assets and deposit amount. The number of banks lending SMEs was 18. Those banks' total assets ranged from 3trillion to 576 trillion VND approximately. Their deposit from customers fluctuated between 2 trillion and 408trillion VND. At the same time, 26 banks were working with LEs. The total asset of these banks varied between 0.046 trillion and 576 trillion VND, while the total deposit ranged from 0.54 trillion to 408 trillion VND. It could be seen that the category of banks that LEs borrowed from was more diversified than those SMEs worked with.

Table 5.1.1.1.Descriptive statistics of banks working with SMEs and LEs.

	Company	Minimum	Maximum	Mean	Standard Deviation
Total Assets	*LEs*	46	576,368	118,182	139,832
	SMEs	2,939	576,368	153,111	151,162
Total Deposits	*LEs*	541	408,172	78,934	99,221
	SMEs	1,788	408,172	102,244	109,066
Physical Capital	*LEs*	35	3,544	779	849
	SMEs	40	3,544	921	926
Income	*LEs*	4	6,259	1,132	1,330
	SMEs	21	6,259	1,489	1,449

5.1.2.Translog Cost function and Bank Market Power Result

In chapter 4, bank market power is calculated by using Lerner index. The translog cost function which is used to calculate marginal cost is shown below.

$$lnC = \alpha_0 + \alpha_1 x\ lnTA + \tfrac{1}{2} x\ \alpha_2 x\ (lnTA)^2 + \alpha_3 x\ lnD + \alpha_4 x\ lnK + \alpha_5 x\ lnL + \tfrac{1}{2} x\ \alpha_6\ x\ (lnD)^2 + \tfrac{1}{2} x\ \alpha_7 x\ (lnK)^2 + \tfrac{1}{2} x\ \alpha_8 x\ (lnL)^2 + \alpha_9 x\ lnD\ x\ lnL + \alpha_{10} x\ lnK\ x\ lnL + \alpha_{11} x\ lnD\ x\ lnK + \alpha_{12} x\ lnTA\ x\ lnD + \alpha_{13} x\ lnTA\ x\ lnK + \alpha_{14} x\ lnTA\ x\ lnL. \quad (1)$$

Table 5.1.2.1 shows the result of this function towards both SMEs and LEs. The parameters α_1, α_2,α_{12},α_{13}, and α_{14} withdrawn from the results are applied into the formula calculating marginal cost.

Table 5.1.2.1.Results of Translog Cost Function to SMEs and LEs.

	SMEs		LEs	
	Coefficient	***Std. Error***	***Coefficient***	***Std. Error***
α_0	-19.943	11.3184	-38.515	8.91572
α_1	*1.02016*	*0.74041*	*2.2262*	*0.586*
α_2	*0.00424*	*0.03233*	*-0.019*	*0.019*
α_3	-1.3916	1.32185	0.70995	0.91907
α_4	2.35671	1.27083	1.99899	0.76587
α_5	0.03483	1.4881	-1.709	0.98058
α_6	0.08486	0.08636	0.05969	0.04324
α_7	-0.031	0.17638	0.23769	0.0601
α_8	-0.0241	0.15791	-0.2711	0.04222
α_9	0.10949	0.19911	-0.1707	0.11354
α_{10}	-0.1714	0.09458	0.02715	0.05505
α_{11}	0.03031	0.15314	0.11096	0.09144
α_{12}	*-0.1585*	*0.13926*	*-0.243*	*0.0322*
α_{13}	*0.08778*	*0.18032*	*-0.206*	*0.1072*
α_{14}	*0.06964*	*0.29543*	*0.4434*	*0.1047*

From the translog function, the marginal cost is identified as

$$MC = \frac{C}{TA} x\ (\alpha_1 + \alpha_2 x\ lnTA + \alpha_{12} x\ lnD + \alpha_{13} x\ lnK + \alpha_{14} x\ lnL)$$

Applying this into Lerner Index: $BMP = (P-MC)/P$, Bank Market Power could be obtained. Table 5.1.2.2 shows the average marginal cost and bank market power towards SMEs and LEs in each area. The full result over years is illustrated in Appendix 7. It could be seen from the result that Bank possesses high market power in Vietnam with over 50% in all area tested. Moreover, when working with SMEs banks have higher power than when they work with LEs in most cases, though the differential is limited to fewer than 15%.

Table 5.1.2.2.Results of Marginal Cost and Bank Market Power to SMEs and LEs.

No.	Area	SMEs		LEs		No.	Area	SMEs		LEs	
		MC	***BMP***	***MC***	***BMP***			***MC***	***BMP***	***MC***	***BMP***
1	BRVT	0.032	0.657	0.039	0.590	17	Khanh Hoa	0.036	0.640	0.040	0.604
2	Bac Ninh	0.033	0.652	0.042	0.565	18	Kien Giang	0.033	0.652	0.042	0.565
3	Binh Duong	0.038	0.669	0.048	0.586	19	Lam Dong	0.036	0.600	0.041	0.548
4	Binh Thuan	0.036	0.600	0.041	0.548	20	Nam Dinh	0.041	0.658	0.051	0.578
5	Can Tho	0.033	0.652	0.042	0.565	21	Nghe An	0.039	0.670	0.048	0.590
6	Da Nang	0.034	0.690	0.042	0.614	22	Ninh Binh	0.031	0.681	0.038	0.606
7	Dak Lak	0.037	0.630	0.040	0.602	23	Phu Yen	0.033	0.652	0.042	0.565
8	Dong Nai	0.035	0.613	0.039	0.572	24	Quang Binh	0.033	0.652	0.042	0.565
9	Dong Thap	0.035	0.613	0.039	0.572	25	Quang Ninh	0.039	0.670	0.048	0.590
10	Ha Nam	0.041	0.658	0.051	0.578	26	Quang Tri	0.033	0.652	0.042	0.565
11	Hanoi	0.038	0.638	0.043	0.597	27	Thai Binh	0.033	0.652	0.042	0.565
12	Hai Duong	0.033	0.652	0.042	0.565	28	Thai Nguyen	0.033	0.652	0.042	0.565
13	Hai Phong	0.033	0.643	0.041	0.556	29	Thanh Hoa	0.040	0.662	0.053	0.548
14	Hoa Binh	0.033	0.652	0.042	0.565	30	Tien Giang	0.033	0.652	0.042	0.565
15	Ho Chi Minh	0.041	0.618	0.037	0.653	31	Yen Bai	0.033	0.652	0.042	0.565
16	Hue	0.032	0.669	0.041	0.582						

To test the difference in Bank Market Power when banks work with SMEs and LEs, a pair sample t-test was conducted by setting up a series of differential between BMP in case of SMEs and LEs and a null hypothesis that the mean of the series is equal to 0. This means the market powers of banks in two circumstances are different when the null hypothesis is rejected. The result of the test is displayed in Table 5.1.2.3.

Table 5.1.2.3. The result of pair sample t-test in BMP in case of SMEs and LEs

Sample: 1 186			
Included observations: 186			
Test of Hypothesis: Mean = 0.000000			
Sample Mean = 0.071102			
Sample Std. Dev. = 0.041421			
Method		***Value***	***Probability***
t-statistic		***23.411***	***0***

The critical value of t distribution with 185 degrees of freedom at the significant level of 5% in two-tail test is ±1.9729 (Easycalculation.com, n.d.). With the actual critical value of the test at 23.411, the null hypothesis is rejected. This means BMPs between the two cases of SMEs and LEs are different. From here and the result of the BMP above, it could be concluded that the first hypothesis is accepted.

5.2.The empirical result about the relationship between BMP and Trade Credit Used of non-financial companies:

5.2.1.Descriptive results:

In final, there are 46 companies in Manufacturing and Processing Sector from each side of SMEs and LEs and 92 companies in total. These enterprises in turn belong to 10 sub-lines in the sector as statistic in the table 5.2.1.1 below.

Table 5.2.1.1. Statistics of companies researched in the study

No.	Sub-line	Quantity in each side	Total Quantity
1	Chemical	3	6
2	Drink	2	4
3	Equipment	7	14
4	Food	2	4
5	Garment	6	12
6	Machine	2	4
7	Mineral but non-metal	13	26
8	Package	3	6
9	Paper	5	10
10	Pharmacy	3	6
	Total	**46**	**92**

The statistics of different aspects of SMEs and LEs is shown in the table 5.2.1.2, while the statistics of their inputs and output in the empirical model is displayed in the table 5.2.1.2. In which, it could be seen that in this research, the scale of LEs on average is much bigger than of SMEs.

Table 5.2.1.2. Statistics of SMEs and LEs researched in the study

		Mean	Minimum	Maximum	Standard Deviation
Total Assets	LEs	121,000	78,000	13,300,000	2,070,000
	SMEs	58,000	11,700	191,000	29,700
Accounts Payable	LEs	112,000	524	1,570,000	191,000
	SMEs	5,560	2.5	54,900	7,120
Trade Payable	LEs	130,000	228	1,600,000	198,000
	SMEs	7,040	2.5	66,800	9,340
Revenue	LEs	1,120,000	89,600	9,030,000	1,450,000
	SMEs	90,500	309	418,000	71,600

Unit: million VND

Table 5.2.1.3. Statistics of inputs and outputs in the empirical model

		Mean	Minimum	Maximum	Standard Deviation
lnTP	LEs	24.81507	19.2427	28.10379	1.280506
	SMEs	22.00664	14.7461	24.9255	1.349359
lnAP	LEs	24.59513	18.9428	28.08516	1.330011
	SMEs	23.53859	20.6143	25.35371	0.863148
BMP	LEs	0.610934	0.54376	0.65493	0.038668
	SMEs	0.640306	0.59675	0.682119	0.023177
BROA	LEs	0.012125	0.009	0.015421	0.001616
	SMEs	0.012073	0.009	0.015421	0.001776
ROA	LEs	0.073446	-0.1696	0.732306	0.085363
	SMEs	0.100124	-0.2582	0.431928	0.080454
lnCA	LEs	26.29215	24.093	28.63681	1.018033
	SMEs	23.98491	21.3388	25.75159	0.709215
FE	LEs	0.0896	-0.091	0.2872	0.0634
	SMEs	0.041193	-2.0639	0.4580	0.2044

It also could be seen from the table that not only on the scale but also on the performance, LEs have a better sign than SMEs do.

5.2.2.Results for the relationship between Bank Market Power and Trade Credit

As mentioned in chapter 4, from the original formula and by applying the correlation matrix to track multicollineary, the final adjusted empirical model includes:

$$lnTP \text{ or } lnAP = \alpha_0 + \alpha_1 \times BMP + \alpha_2 \times BROA + \alpha_3 \times FE + \alpha_4 \times lnCA + u \quad (A)$$

And

$$lnTP \text{ or } lnAP = \alpha_0 + \alpha_1 \times BMP + \alpha_2 \times BROA + \alpha_3 \times ROA + \alpha_4 \times lnCA + u \quad (B)$$

Table 5.2.2.1 displays the result of this model in the comparison between SMEs and LEs. Firstly, the $R^2$of the final model are from 56% to 62% in the case of LEs and 40% to 44% in the case of SMEs. These numbers do not change much from those of the original model whose results could be seen in Appendix 9.

Table 5.2.2.1. Results of the empirical model on the relationship between Bank Market Power and Trade Credit

	Model A				**Model B**			
Dependent Variables	**lnTP**		**lnAP**		**LnTP**		**lnAP**	
	LEs	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***
C	2.147 *(1.503)*	-5.14*** *(2.922)*	2.293 *(1.634)*	8.098* *(1.898)*	1.997 *(1.536)*	-5.897** *(2.84)*	2.11 *(1.658)*	6.767* *(1.884)*
BMP	-4.391* *(1.438)*	-4.867 *(3.028)*	-5.483* *(1.562)*	-4.737** *(2.013)*	-2.922** *(1.458)*	-4.3834 *(3.006)*	-4.4307* *(1.573)*	-4.424** *(2.031)*
BROA	83.293** *(34.798)*	136.463* *(39.591)*	79.727** *(37.826)*	21.5111 *(25.9866)*	53.599 *(34.903)*	137.868* *(39.047)*	53.95 *(38.065)*	27.801 *(25.500)*
ROA					-1.934* *(0.673)*	-1.321** *(0.58)*	-1.195 *** *(0.633)*	-1.664* *(0.485)*
FE	-3.724* *(0.776)*	-0.0858 *(0.321)*	-2.82* *(0.843)*	0.493** *(0.2147)*				
LNCA	0.938* *(0.048)*	1.1939* *(0.092)*	0.948* *(0.052)*	0.758* *(0.058)*	0.916* *(0.049)*	1.216* *(0.089)*	0.937* *(0.053)*	0.805* *(0.056)*
R^2	0.6168	0.412339	0.5803	0.450716	0.600236	0.42338	0.568655	0.443244

**: significant level at 1%*

***: significant level at 5%*

****: significant level at 10%*

Firstly the result of R^2shows that that in case of LEs the model explained better when Payable to customer was included in the dependent variables, while in case of SMEs, the model preferred Accounts Payables only in the right side of the equation. Moreover, it's noticeable that when the independent variable changed from FE to ROA, the sign and level of coefficients of other variables didn't change.

In the next stage, the result also indicated that the main independent variable, Bank Market Power, negatively impacts on the Trade Credit of either LEs or SMEs in case of both Trade Payable and Accounts Payable. However, this relationship was proved to be significant at 1% and 5% in three cases, while under the circumstance of SMEs considering their behavior towards both suppliers and customers the impact of Bank market power was not significant. Another important point differing SMEs and LEs is their coefficient of BMP. It could be seen that when the Total Trade Payable was on the right side of the formula, SMEs' Trade Credit fluctuated in a higher level than LEs' did. However, when only Account Payable is considered, LEs seemed to be more affected on their trade credit use than SMEs were.

The coefficient of BROA, another external variable that indicated the bank performance, displayed the same view as BMP in the range of changing, though BROA has positive relationship towards trade credit. In addition, this variable was proved to be more significant to the dependent variables when it's considered together with FE, while when it was with ROA of companies, the significance could be seen in only the relationship with Trade Payable of SMEs.

The results of variables from the internal environment of companies display different direction. The first variable, ROA, significantly and negatively impacts on Trade Credit of both SMEs and LEs. However, the influence was stronger on LEs in case of Total Trade payable than on SMEs but vice versa in case of Account Payable.

Current Assets also had the same direction of impact on both SMEs and LEs but positively, Their coefficients, interestingly, showed the same characteristics with the external group, in which the absolute value of the coefficients of LEs were larger than those of SMEs when Account Payable was the dependent one, but were smaller when Trade Payable replaced Account Payables.

The special point is Firm Efficiency (FE) that firstly it was not significant to the decision of SMEs in case of Total Trade Payable. However, it was positively significant to SMEs when considering their behavior to Suppliers only. At the same time, FE of LEs got a negative sign on their coefficients and was significant.

These results of the empirical model suggest that the impact of different variables on the decision of using Trade Credit of the companies was much diversified in scale and direction, despite of the source of variable from internal or external. These interesting findings will be discussed and concluded in the next chapter.

CHAPTER 6: DISCUSSION AND CONCLUSION

In this chapter, the findings from the model and data in previous chapters will be discussed to answer the questions and hypotheses in the Introduction and Methodology parts. Hence, the first part of the chapter is about Bank Market Power in Vietnam. Following that is discussion about the relationship between Trade Credit and Bank Market Power. Finally, the influence of other factors than Bank Market Power will be considered. Based on these discussions, a conclusion for the thesis with the limitation and opportunity of further researches is included in the last part of the chapter.

6.1. Bank market power in Vietnam:

The first purpose of the thesis is to calculate Bank Market Power and making comparison on the level of this power towards SMEs and LEs with the hypothesis that Banks when are working with SMEs possess higher power than they have with LEs.

The result is Vietnamese Banks possess a particularly high level of Market Power that up to 60%, doubling the average rate of developing countries in general in Ariss (2010) at 30%. Moreover, the hypothesis between SMEs and LEs is proved by the result running throw the data of Vietnamese firms, though the differential is not so high, up to 15 point.

Firstly, to explain the extreme level of Bank Market Power in the country, one possible reason for the extreme market power is the highly concentrated market of Vietnam with the market shares the main banks up to 52%.The rough HHI calculating from the market

share of 13 biggest banks in the country in 2012 provided by VPBank Securities (2014) (Appendix 10) is:

$15.5^2 + 10.8^2 + 11^2 + 7.8^2 + 3.3^2 + 3.1^2 + 2.9^2 + 2.4^2 + 2.2^2 + 1.8^2 + 1.2^2 + 0.9^2 = 6332$

If applying the standard of U.S. Department of Justice, the Banking Industry of Vietnam is considered to be highly correlated. Applying this result, due to Tirole (1988), Lerner Index is equal to HHI over the elasticity of demand. If keeping the elasticity of demand constant, this high level of concentration explains the extreme power in the bank market.

At the next stage, the first hypothesis is accepted, in which Banks in Vietnam when lending LEs has less power than when working with SMEs. This could initially be explained by using the argument of De la Torre, Peria and Schmukler (2010) that the banks who have various services and activate in a wide scale are the ones who are able to come in and lead the financial market to SMEs. Applying it into Vietnam, firstly it was stated in KPMG (2013) that the long history, high reputation, and wide branch network of the main banks make them more available and trustable to customer over the country. Furthermore, though Vietnam possesses a large number of banks, but as statistics by VPBank Securities (2014), the small banks tend to focus on big cities while large banks lengthen their arms to other provinces based on their advantage about technology, human, and capital. Therefore, it’s reasonable to postulate that SMEs in Vietnam have less choice in their banking suppliers than LEs do, or the competition of

banks in the SMEs market is less fierce than in LEs market, resulting in the more power they have in the former market.

In addition to that, Banks in Vietnam do less expose to SMEs as stated in several statistics in background chapter that only 15% of SMEs could access lending resource (Nguyen, H.H, 2014), while around 20 to 30% of the capital of big banks flows into big project (Minh Phuong & Duc Kien, 2014). This is understandable, especially under the circumstance of financial crisis when SMEs seems to be riskier than their colleague LEs, as said in Carbo-Valverde, Rodriguez-Fernandez and Udell (2009). It is also emphasized in Beck, Demirgüç-Kunt, & Martinez Peria (2008) that this problem is more popular in developing countries like Vietnam when banks seems to be more suffered from Non-performing loans from SMEs than LEs. As a result, loans in these countries are less available to the former than the later. Furthermore, Cetorelli and Strahan (2006) argued that LEs normally have other choices, such as bond or equity, to collect capital rather than bank loans, while SMEs do not have that advantage due to their unpopular and high risk. In other words, according to economics theories, apparently SMEs gets more difficult to find substitute resource to bank loans, therefore, their elasticity of demand to this capital is lower than LEs'. Put it into the formula regarding to Lerner Index of Tirole (1988) above, the lower the elasticity is, the higher the bank market power is.

In conclusion about Bank Market Power in Vietnam, it's clear that LEs in the country have more choice in both bank loans and its alternative resource, resulting in the lower

market power that Bank possesses when working with them rather than when lending SMEs.

6.2. Bank Market Power and Trade Credit:

The second question of the thesis is about the relationship between Bank Market Power and Trade Credit of non-financing companies with the hypothesis following the *traditional hypothesis*one that the higher the bank market power is, the less available the bank loan is, hence, the more the trade credit is used. In short, bank market power is assumed to positively impact Trade Credit. The hypothesis also assumed that the effect of Bank Market Power on Trade Credit in SMEs is greater than in LEs.

In order to test this hypothesis, a linear regression is used through the data of Vietnam, in which Bank Market Power is the main factor, and the depending variables includes Accounts Payable only and Total Trade Payable in order to research the behavior of companies toward both their suppliers and customers.

The result is the sign of the coefficient is negative, meaning that the hypothesis is rejected and that the relationship between Bank Market Power and Trade Credit follows the *information hypothesis* – the higher bank market power, the more available the bank loan is, the less dependence on Trade Credit the company is.

Table 6.2.1.Results on Bank Market Power and Trade Credit.

	Model A				Model B			
Dependent Variables	**lnTP**		**lnAP**		**lnTP**		**lnAP**	
	LEs	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***
BMP	-4.391* *(1.438)*	-4.867 *(3.028)*	-5.483* *(1.562)*	-4.737** *(2.013)*	-2.922** *(1.458)*	-4.3834 *(3.006)*	-4.4307* *(1.573)*	-4.424** *(2.031)*

The reason for rejecting the hypothesis, according to Petersen and Rajan (1995), is the lending relationship between Bank and its customers. Bank considers its clients as a long-term investment with potential profit in future rather than a short-term target. By this way, a fierce competing environment is assumed to create less chance for bank to share this benefit with enterprises.Therefore, bank is less interested in investing a long-run relationship with its customer, which probably resulting in less bank loan available at higher rate, forcing companies to seek an alternative resource as Trade Credit than in a low competition.

It was proved by Nguyen, TB LE, N. G. O. C., and Freeman (2006)about the existence of a network among Vietnamese firms and banks as under several certainties regarding to lacking of information, transparency, and effective market institution, the solution of Vietnamese banks to prevent non-performing loans is “relying on trust”, meaning the participants in the transaction trust each other and form a long-term relationship for banks to support firms in many difficult situations. This is especially applied on private banks. Large banks, on the other hand, maintain the relationship with their customers because of other reasons. As noted on the background that Vietnam Government highly

interferes in the national banking system when playing as the main shareholder of the biggest four banks in the country. This means these banks perform not only the tasks of commercial banks, but also those of Government's tools to settle and develop the economics. Hence, their customer relationship sometimes follows the state's policy, according to Nguyen, TB LE, N. G. O. C., and Freeman (2006) and Petersen and Rajan (1995), to support both SMEs and LEs; and the banks under this case do not have many things to deal with competition because of the back-up from government.

From the above discussion, it could be conclude that the *market hypothesis* doesn't work in Vietnam Banking System. Instead of that, the *Information hypothesis* with lending relationships seems to be more suitable to explain the situation in the country.

The interesting point is the level of the influence of Bank Market Power on Trade Credit of SMEs and LEs. It's noted that when the independent variable is Total Trade Payable that includes both Account Payable and Payable to customer, the absolute value of the coefficient of SMEs is bigger than of LEs, meaning that Total Trade Payable of the former is more sensitive to the change of Bank Market Power than the later (1point change in BMP create the change of $e^{4.391}$ in Trade Payable of LEs but of $e^{4.867}$ in case of SMEs, under the model A, for example). On the other hand, when only Account Payable is considered, Trade Credit of LEs is more affected (at $e^{5.483}$) than those of SMEs (at $e^{4.737}$) when BMP change.

To clearly explain the situation, it should be noted that the two cases of dependent variables including Total Trade Payable and Account Payables are used to analyze the relationship of companies toward both their suppliers and customers and only their suppliers respectively in case of being constraint in bank loan.Sellers, as proved by Petersen and Rajan (1997), also base on the credit worthiness of customers to provide them extra credit. In general, the credit quality of LEs is normally estimated to be higher than SMEs'. Moreover, under the circumstance of crisis, SMEs occupied the majority part of Vietnamese companies who went bankruptcy or stop activating (Trung Ninh, 2014) while LEs are highly expected to recover from the depression (VnEconomy, 2014). Hence, it's reasonable that under the circumstance of being financing constraints, LEs could be granted more credit SMEs could. Moreover, it should be noted that the variable here is evaluated by the logarithm of the absolute value of Account Payable. This, along with the nature of big transaction in LEs requiring large amount of Accounts Payable, could resulting in the more sensitive of the dependent variable on BMP of LEs than SMEs'. By this explanation, when moving the dependent variable from only Accounts payable to both Accounts Payable and Payable to customers, it's possible that under the situation of being constraint by both banks and suppliers, SMEs tend to go to another choice of customers, while LEs do not really need to go this way based on their advantages. Therefore, in general, it could be concluded that though the *market hypothesis* is rejected, SMEs were still affected more by Bank Market Power than LEs were.

6.3. Other factors and Trade Credit:

The third purpose of the thesis is to figure out the effects of other factors, both external and internal, on Trade Credit. To achieve the result, an empirical model with independent variables including Bank Performance (BROA), Firm Performance (ROA), Firm Efficiency (FE) and Firm's Current Assets (lnCA). The result of these variables will be discussed separately following.

Bank Performance (BROA)

This is an interesting result, since normally a high ROA of bank means the bank could ease the requirement for bank loans and more credit available for companies, making them to be less dependent on Trade Credit. The result of Vietnamese companies shows a totally opposite direction. The positive sign in coefficients means the better Bank Performance is, the more the companies use Trade Credit.

Table 6.3.1. Bank Performance and Trade Credit

	Model A				**Model B**			
Dependent Variables	**lnTP**		**LnAP**		**lnTP**		**lnAP**	
	LEs	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***	***LEs***	***SMEs***
BROA	83.293** *(34.798)*	136.463* *(39.591)*	79.727** *(37.826)*	21.5111 *(25.9866)*	53.599 *(34.903)*	137.868* *(39.047)*	53.95 *(38.065)*	27.801 *(25.500)*

To reasonably explain this particular situation, it's necessary to understand the ROA of Bank. One company could create a high ROA by either boosting its income or downing its Total Assets. Bank, in its nature, has loans to customers occupying main part of its assets.

In order to have high ROA, the first choice is to down the assets; hence, bank might cut the credit available to customers. Secondly, to get high income, it's necessary to manage interest rate as well as risk management. In the situation of high interference of Government on the system in Vietnam, according to the argument of Beck, Demirgüç-Kunt, & Martinez Peria (2008), Banks, especially state-owned, probably provide the capital to the project or companies under the policy of Government at low interest rate and charged SMEs at higher interest rate. In addition to that is the effect of financial crisis, making many loans to become non-performing loans and increasing the bad debt expenses. As a result, ROA of banks might probably be lower when they increasing their loan, due to the risk of bad debt and low interest rate from their main projects, while they get better ROA by controlling bad debt and charge companies at higher interest rate.

The scale of coefficient in this case is similar to Bank Market Power, in which when the dependent variables is account payable, LEs seems to be more sensitive while if the total trade payable on the left side of the formula, SMEs seems to be more sensitive. The similar explanation from BMP could be applied for this case that when the bank control their ROA by tightening their requirement for banks loans, both LEs and SMEs are constrained in financing. However, LEs are granted more trade credit from their suppliers, while SMEs must seek help from both customers and suppliers.

Firm Performance

Firm performance, evaluated by ROA, is the first variable in the internal group to be considered. The negative sign of the coefficient shows that the more profitable the

company is, the less dependent on trade credit it is. This result could be explained by the argument of Marotta (2001) that only firms who are underperforming have to depend on trade credit to financing their assets or improving their sales. At the same time, companies with better ROA could be highly estimated by banks and other institution, which provide them other resources, while Trade Credit in many cases, as stated by Yang (2011), and is considered to be much more expensive than bank loans.

At the next stage, the differences between SMEs and LEs, as usual, are shown in the level of coefficient. When the dependent variable is Account Payable, SMEs fluctuate more than LEs do when ROA change. The above explanation of Marotta (2011) could be applied in this case, in which when SMEs do not perform well, they tend to delays their payment to their suppliers. LEs, on the other hands, could find another resource to pay their sellers. These alternative resources might include their customers, since they are in the position that probably is able to ask the goods to be paid in advance as a deposit, while SMEs seems to not have that strong bargaining power in the chain. This is the reason for the higher coefficient of LEs when Total Trade Payable is the dependent variable.

Firm efficiency

This is the only variable that has different sign in coefficient in different cases. In more details, the sign is negative in case of SMEs when the dependent variable is Total Trade Payable and of LEs with both two dependent variables but is positive when the left variable is Account Payable and the object is SMEs.

Firm efficiency, as its name, reflects how good the company is in managing its cost. Apparently, the better it does in the field, the less dependent it is on trade credit, as this source is considered to be very expensive than others and companies tends to repay it as soon as possible to gain the discount rate within days (Petersen & Raja, 1997 and Yang, 2011). LEs might is more sensitive in this case because their low efficiency in managing cost might require much more money problem to cope with than SMEs do.

The positive coefficient in case of SMEs when considering only Accounts Payable could be explained by Ferris (1981) that these companies used Trade Credit as a method of managing cash flow as they can set up the date of payment.

Current Assets

This is very basic relationship, since Current Assets such as Cash, Inventory and Accounts Receivable is considered to be mainly financed by Trade Credit and be matching in term and conditions as said in Calomiris, Himmlerand Watchtel (1995) and Basto and Pidando (2013). The result of the empirical model is consistent with those researches that Current Assets positively impact Trade Credit. The reason for this is firstly, according to Haley and Higgins (1973), Trade Credit is used to finance Inventory, while according to Basto and Pidando (2013), companies delay payment to their suppliers to finance their customers in Accounts Receivable. Ferris (1981) also pointed out the role of being a tool for cash management of Trade Credit. Hence, there is no reason to reject this relationship.

SMEs, as similar to the case of ROA, are considered to be more effected by the change of current assets, because though they use more Accounts Payable than SMEs do. However, it could be a result of LEs' good quality credit, which makes LEs being less dependent on Total Trade Payable than SMEs.

6.4. Conclusion:

This research's aims are to calculated and compare bank market power between Small and Medium Enterprises and Large Companies as well as the effects of the power on the decision of using Trade Credit of these companies. By building model from previous researches, having suitable adjustments based on the conditions of Vietnam and running the model through the data of Manufacturing and Processing Companies listed on Stock Market, the study figures out that Banks in Vietnam have much higher market power than in other developing countries, and that banks lending SMEs posses higher power than when work with LEs.

Moreover, based on this calculation and the empirical model, the study suggests that the relationship between Trade Credit and Bank Market Power in Vietnam follows the *information hypothesis*, in which the lower competition provides more bank loans, making companies depend less on Trade Credit. SMEs are proved to be more effected by this main factor. The research also explores the relationship of Trade Credit with other external and internal factors and figures out that the situation in Vietnam is not always follow the general direction, such as the positive impact of Bank Performance on

Trade Credit used of companies, which the possible reasons are the high interference of Vietnam Government in the system and the consequences of the financial crisis.

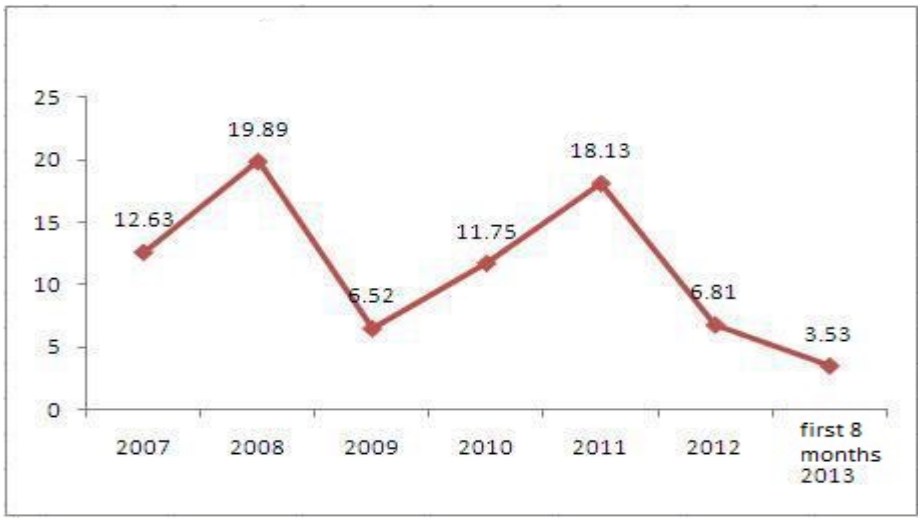
The results of the thesis have implications on problems of Vietnam Banking and business system in particular and of developing countries with less-developed financial market in general. The findings prove that in these countries the government policies, the business network and relationship might have stronger effects on the capital decision of companies than typical competition principles do. SMEs are more vulnerable and get more difficulties in accessing bank loans because of not only their business but also their geographical position. This might give the policy marker a suggestion in supporting these companies by encouraging small banks to widen their scale to other destinations rather than big cities. Finally, the results regarding to suppliers and customers implicate that in most cases, suppliers, similar to banks, rank LEs in credit worthiness than SMEs, hence, sometimes SMEs have to run to their customers under the constraint of both the former sponsors.

The thesis provides a valuable overview about banking and business system in Vietnam. However, it contains several limitations that result in the low R^2 of the model and the insignificance of several variables in particular cases. The most important limitations are the data that is collected from the secondary sources and the quite short researching time. To improve the results, a further research with an empirical data by conducting the survey among firms should be built to gain more understanding on the perspectives of management of companies instead of their financial statements. The difference results

when considering the account payable only and the total trade payable also need to be tested based on the real opinion of companies, their suppliers and customers, which are not available in the thesis.

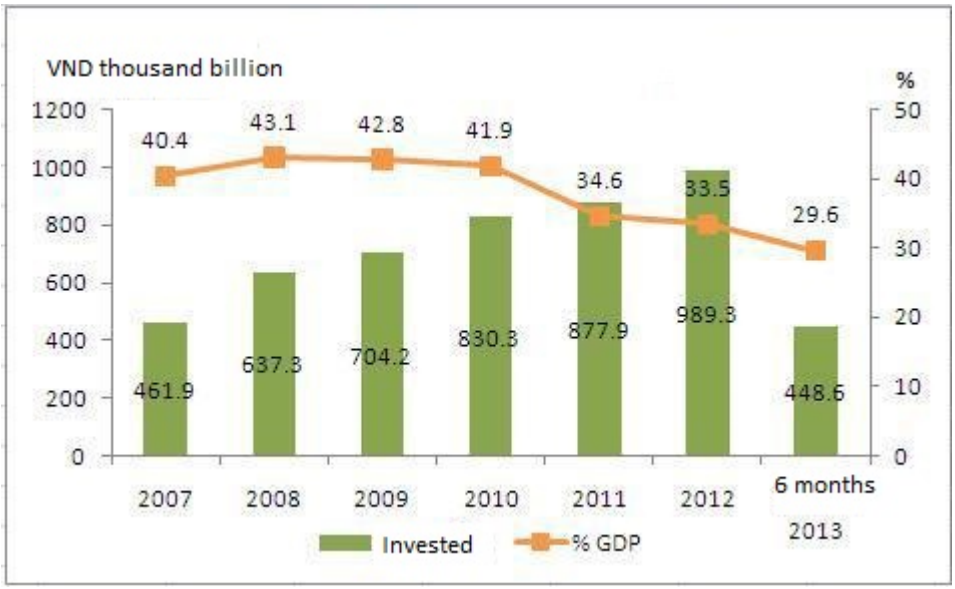
APPENDIXES

Appendix 1. CPI growth rate in Vietnam from 2007 to 2013



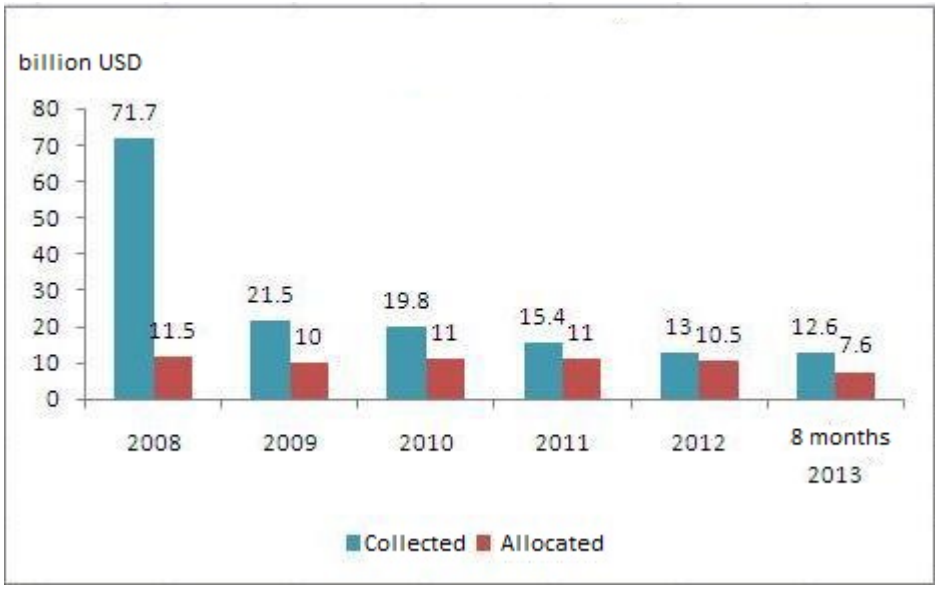
Source: General Statistic Office – cited in Huyen Thu (2013)

Appendix 2.Total Social Invested Capital in Vietnam from 2007 to 2013.



Source: General Statistic Office – cited in Huyen Thu (2013)

Appendix 3. Collected and Allocated FDI in Vietnam from 2008 to 2013.



Source: Ministry of Planning and Investment of Vietnam, cited in Huyen Thu (2013)

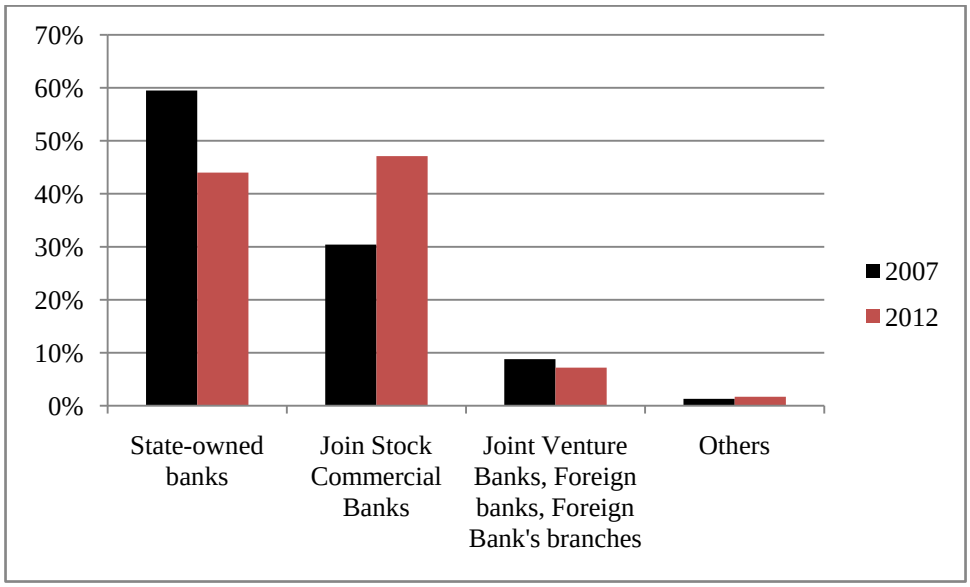
Appendix 4.Quantity of Banks in Vietnam from 1991 to 2009.

Year	1991	1993	1995	1997	1999	2001	2005	2006	2007	2008	2009(*)
State-owned Commercial Banks	4	4	4	5	5	5	5	5	5	4	3
Private Commercial Banks	4	41	48	51	48	39	37	34	35	39	40
Join-Venture Banks	1	3	4	4	4	4	4	5	5	5	5
Branches of foreign banks	0	8	18	24	26	26	29	31	41	41	41

Source: SBV, cited in MHBS (2009)

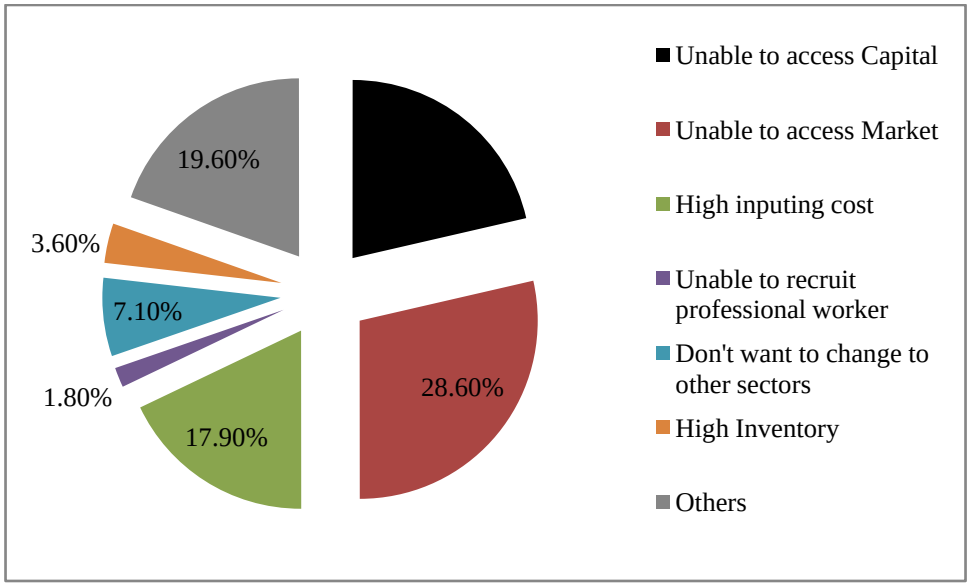
(*): counted up to October 2009.

Appendix 5. Banking Market share comparison in 2012 and 2007



Source: VnEconomy, Cited in VPBank Securities (2014)

Appendix 6. Reasons for enterprises stop activating in 2012.



Source: VCCI (2012)

Appendix 7.Result of Marginal Cost and Bank Market Power to SMEs and LEs.

No.	Area	Year	SMEs		LEs		No.	Area	Year	SMEs		LEs	
			MC	**BMP**	**MC**	**BMP**				**MC**	**BMP**	**MC**	**BMP**
1	BRVT	2008	0.038	0.641	0.047	0.557	5	Can Tho	2008	0.039	0.635	0.051	0.522
	BRVT	2009	0.027	0.664	0.030	0.623		Can Tho	2009	0.027	0.661	0.031	0.612
	BRVT	2010	0.029	0.667	0.035	0.605		Can Tho	2010	0.032	0.656	0.041	0.554
	BRVT	2011	0.039	0.656	0.053	0.535		Can Tho	2011	0.041	0.646	0.057	0.505
	BRVT	2012	0.033	0.656	0.038	0.605		Can Tho	2012	0.032	0.656	0.037	0.600
	BRVT	2013	0.028	0.659	0.032	0.616		Can Tho	2013	0.030	0.658	0.035	0.598
2	Bac Ninh	2008	0.039	0.635	0.051	0.522	6	Da Nang	2008	0.036	0.678	0.044	0.609
	Bac Ninh	2009	0.027	0.661	0.031	0.612		Da Nang	2009	0.022	0.710	0.025	0.674
	Bac Ninh	2010	0.032	0.656	0.041	0.554		Da Nang	2010	0.046	0.687	0.062	0.583
	Bac Ninh	2011	0.041	0.646	0.057	0.505		Da Nang	2011	0.035	0.691	0.044	0.602
	Bac Ninh	2012	0.032	0.656	0.037	0.600		Da Nang	2012	0.034	0.685	0.043	0.599
	Bac Ninh	2013	0.030	0658	0.035	0.598		Da Nang	2013	0.029	0.687	0.035	0.616
3	Binh Duong	2008	0.038	0.655	0.048	0.562	7	Dak Lak	2008	0.043	0.623	0.047	0.591
	Binh Duong	2009	0.026	0.684	0.031	0.631		Dak Lak	2009	0.029	0.649	0.028	0.655
	Binh Duong	2010	0.062	0.653	0.081	0.546		Dak Lak	2010	0.032	0.648	0.034	0.627
	Binh Duong	2011	0.042	0.660	0.058	0.528		Dak Lak	2011	0.044	0.628	0.054	0.537
	Binh Duong	2012	0.031	0.682	0.036	0.623		Dak Lak	2012	0.041	0.606	0.043	0.587
	Binh Duong	2013	0.031	0.680	0.036	0.625		Dak Lak	2013	0.034	0.628	0.035	0.617
4	Binh Thuan	2008	0.041	0.576	0.048	0.502	8	Dong Nai	2008	0.040	0.590	0.045	0.535
	Binh Thuan	2009	0.031	0.599	0.032	0.586		Dong Nai	2009	0.030	0.612	0.031	0.600
	Binh Thuan	2010	0.035	0.595	0.040	0.536		Dong Nai	2010	0.032	0.614	0.035	0.582
	Binh Thuan	2011	0.043	0.597	0.053	0.503		Dong Nai	2011	0.041	0.613	0.050	0.529
	Binh Thuan	2012	0.037	0.575	0.038	0.561		Dong Nai	2012	0.037	0.589	0.039	0.572
	Binh Thuan	2013	0.030	0.658	0.035	0.598		Dong Nai	2013	0.028	0.659	0.032	0.616

No.	Area	Year	SMEs		LEs		No.	Area	Year	SMEs		LEs	
			MC	*BMP*	*MC*	*BMP*				*MC*	*BMP*	*MC*	*BMP*
9	Dong Thap	2008	0.040	0.590	0.045	0.535	17	Khanh Hoa	2008	0.040	0.632	0.045	0.582
	Dong Thap	2009	0.030	0.612	0.031	0.600		Khanh Hoa	2009	0.028	0.659	0.029	0.654
	Dong Thap	2010	0.032	0.614	0.035	0.582		Khanh Hoa	2010	0.031	0.656	0.033	0.630
	Dong Thap	2011	0.041	0.613	0.050	0.529		Khanh Hoa	2011	0.046	0.631	0.056	0.545
	Dong Thap	2012	0.037	0.589	0.039	0.572		Khanh Hoa	2012	0.039	0.619	0.042	0.591
	Dong Thap	2013	0.028	0.659	0.032	0.616		Khanh Hoa	2013	0.031	0.640	0.032	0.625
10	Ha Nam	2008	0.039	0.649	0.051	0.534	18	Kien Giang	2008	0.039	0.635	0.051	0.522
	Ha Nam	2009	0.028	0.672	0.033	0.610		Kien Giang	2009	0.027	0.661	0.031	0.612
	Ha Nam	2010	0.071	0.636	0.090	0.541		Kien Giang	2010	0.032	0.656	0.041	0.554
	Ha Nam	2011	0.044	0.649	0.058	0.541		Kien Giang	2011	0.041	0.646	0.057	0.505
	Ha Nam	2012	0.032	0.671	0.036	0.620		Kien Giang	2012	0.032	0.656	0.037	0.600
	Ha Nam	2013	0.034	0.670	0.039	0.623		Kien Giang	2013	0.030	0.658	0.035	0.598
11	Hanoi	2008	0.042	0.611	0.040	0.628	19	Lam Dong	2008	0.041	0.576	0.048	0.502
	Hanoi	2009	0.026	0.660	0.025	0.680		Lam Dong	2009	0.031	0.599	0.032	0.586
	Hanoi	2010	0.045	0.644	0.048	0.616		Lam Dong	2010	0.035	0.595	0.040	0.536
	Hanoi	2011	0.043	0.631	0.054	0.537		Lam Dong	2011	0.043	0.597	0.053	0.503
	Hanoi	2012	0.041	0.618	0.050	0.532		Lam Dong	2012	0.037	0.575	0.038	0.561
	Hanoi	2013	0.031	0.662	0.038	0.586		Lam Dong	2013	0.030	0.658	0.035	0.598
12	Hai Duong	2008	0.039	0.635	0.051	0.522	20	Nam Dinh	2008	0.039	0.649	0.051	0.534
	Hai Duong	2009	0.027	0.661	0.031	0.612		Nam Dinh	2009	0.028	0.672	0.033	0.610
	Hai Duong	2010	0.032	0.656	0.041	0.554		Nam Dinh	2010	0.071	0.636	0.090	0.541
	Hai Duong	2011	0.041	0.646	0.057	0.505		Nam Dinh	2011	0.044	0.649	0.058	0.541
	Hai Duong	2012	0.032	0.656	0.037	0.600		Nam Dinh	2012	0.032	0.671	0.036	0.620
	Hai Duong	2013	0.030	0.658	0.035	0.598		Nam Dinh	2013	0.034	0.670	0.039	0.623

No.	Area	Year	SMEs		LEs		No.	Area	Year	SMEs		LEs	
			MC	*BMP*	*MC*	*BMP*				*MC*	*BMP*	*MC*	*BMP*
13	Hai Phong	2008	0.039	0.619	0.045	0.563	21	Nghe An	2008	0.036	0.661	0.045	0.584
	Hai Phong	2009	0.026	0.653	0.028	0.616		Nghe An	2009	0.026	0.686	0.031	0.623
	Hai Phong	2010	0.029	0.655	0.037	0.556		Nghe An	2010	0.062	0.654	0.081	0.551
	Hai Phong	2011	0.037	0.645	0.048	0.537		Nghe An	2011	0.041	0.662	0.054	0.558
	Hai Phong	2012	0.041	0.616	0.053	0.507		Nghe An	2012	0.034	0.680	0.043	0.598
	Hai Phong	2013	0.027	0.668	0.037	0.554		Nghe An	2013	0.032	0.679	0.037	0.624
14	Hoa Binh	2008	0.039	0.635	0.051	0.522	22	Ninh Binh	2008	0.036	0.664	0.039	0.634
	Hoa Binh	2009	0.027	0.661	0.031	0.612		Ninh Binh	2009	0.024	0.692	0.026	0.666
	Hoa Binh	2010	0.032	0.656	0.041	0.554		Ninh Binh	2010	0.028	0.692	0.036	0.599
	Hoa Binh	2011	0.041	0.646	0.057	0.505		Ninh Binh	2011	0.038	0.673	0.054	0.540
	Hoa Binh	2012	0.032	0.656	0.037	0.600		Ninh Binh	2012	0.033	0.685	0.043	0.590
	Hoa Binh	2013	0.030	0.658	0.035	0.598		Ninh Binh	2013	0.026	0.681	0.033	0.607
15	Ho Chi Minh	2008	0.043	0.605	0.037	0.659	23	Phu Yen	2008	0.039	0.635	0.051	0.522
	Ho Chi Minh	2009	0.028	0.646	0.023	0.710		Phu Yen	2009	0.027	0.661	0.031	0.612
	Ho Chi Minh	2010	0.041	0.630	0.034	0.693		Phu Yen	2010	0.032	0.656	0.041	0.554
	Ho Chi Minh	2011	0.046	0.617	0.045	0.628		Phu Yen	2011	0.041	0.646	0.057	0.505
	Ho Chi Minh	2012	0.048	0.587	0.046	0.602		Phu Yen	2012	0.032	0.656	0.037	0.600
	Ho Chi Minh	2013	0.037	0.623	0.036	0.629		Phu Yen	2013	0.030	0.658	0.035	0.598
16	Hue	2008	0.036	0.651	0.043	0.583	24	Quang Binh	2008	0.039	0.635	0.051	0.522
	Hue	2009	0.025	0.680	0.029	0.626		Quang Binh	2009	0.027	0.661	0.031	0.612
	Hue	2010	0.030	0.676	0.040	0.568		Quang Binh	2010	0.032	0.656	0.041	0.554
	Hue	2011	0.038	0.662	0.053	0.531		Quang Binh	2011	0.041	0.646	0.057	0.505
	Hue	2012	0.035	0.674	0.045	0.581		Quang Binh	2012	0.032	0.656	0.037	0.600
	Hue	2013	0.028	0.671	0.034	0.603		Quang Binh	2013	0.030	0.658	0.035	0.598

No.	Area	Year	SMEs		LEs		No.	Area	Year	SMEs		LEs	
			MC	*BMP*	*MC*	*BMP*				*MC*	*BMP*	*MC*	*BMP*
25	Quang Ninh	2008	0.036	0.661	0.045	0.584	29	Thanh Hoa	2008	0.039	0.650	0.052	0.533
	Quang Ninh	2009	0.026	0.686	0.031	0.623		Thanh Hoa	2009	0.027	0.680	0.034	0.597
	Quang Ninh	2010	0.062	0.654	0.081	0.551		Thanh Hoa	2010	0.062	0.655	0.085	0.524
	Quang Ninh	2011	0.041	0.662	0.054	0.558		Thanh Hoa	2011	0.043	0.658	0.061	0.510
	Quang Ninh	2012	0.034	0.680	0.043	0.598		Thanh Hoa	2012	0.035	0.662	0.047	0.548
	Quang Ninh	2013	0.032	0.679	0.037	0.624		Thanh Hoa	2013	0.033	0.665	0.041	0.579
26	Quang Tri	2008	0.039	0.635	0.051	0.522	30	Tien Giang	2008	0.039	0.635	0.051	0.522
	Quang Tri	2009	0.027	0.661	0.031	0.612		Tien Giang	2009	0.027	0.661	0.031	0.612
	Quang Tri	2010	0.032	0.656	0.041	0.554		Tien Giang	2010	0.032	0.656	0.041	0.554
	Quang Tri	2011	0.041	0.646	0.057	0.505		Tien Giang	2011	0.041	0.646	0.057	0.505
	Quang Tri	2012	0.032	0.656	0.037	0.600		Tien Giang	2012	0.032	0.656	0.037	0.600
	Quang Tri	2013	0.030	0.658	0.035	0.598		Tien Giang	2013	0.030	0.658	0.035	0.598
27	Thai Binh	2008	0.039	0.635	0.051	0.522	31	Yen Bai	2008	0.039	0.635	0.051	0.522
	Thai Binh	2009	0.027	0.661	0.031	0.612		Yen Bai	2009	0.027	0.661	0.031	0.612
	Thai Binh	2010	0.032	0.656	0.041	0.554		Yen Bai	2010	0.032	0.656	0.041	0.554
	Thai Binh	2011	0.041	0.646	0.057	0.505		Yen Bai	2011	0.041	0.646	0.057	0.505
	Thai Binh	2012	0.032	0.656	0.037	0.600		Yen Bai	2012	0.032	0.656	0.037	0.600
	Thai Binh	2013	0.030	0.658	0.035	0.598		Yen Bai	2013	0.030	0.658	0.035	0.598
28	Thai Nguyen	2008	0.039	0.635	0.051	0.522							
	Thai Nguyen	2009	0.027	0.661	0.031	0.612							
	Thai Nguyen	2010	0.032	0.656	0.041	0.554							
	Thai Nguyen	2011	0.041	0.646	0.057	0.505							
	Thai Nguyen	2012	0.032	0.656	0.037	0.600							
	Thai Nguyen	2013	0.030	0.658	0.035	0.598							

Appendix 8. Results of the empirical models

Model A:

SMEs - Dependent Variable: LNTP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.14013	2.921699	-1.7593	0.0797
BMP	**-4.86699**	**3.027716**	**-1.60748**	**0.1091**
BROA	136.4636	39.59127	3.44681	0.0007
FE	-0.08583	0.321431	-0.26702	0.7897
LNCA	1.193905	0.092491	12.90838	0

R-squared	***0.412339***	***Mean dependent var***	***21.98235***
Adjusted R-squared	0.403535	S.D. dependent var	1.34774
S.E. of regression	1.040875	Akaike info criterion	2.936212

SMEs -Dependent Variable: LNAP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.098504	1.898454	4.265842	0
BMP	**-4.73713**	**2.013144**	**-2.3531**	**0.0193**
BROA	21.51148	25.98663	0.82779	0.4085
FE	0.49286	0.214666	2.295933	0.0224
LNCA	0.758339	0.057569	13.1726	0

R-squared	***0.450716***	***Mean dependent var***	***23.48484***
Adjusted R-squared	0.442609	S.D. dependent var	0.932908
S.E. of regression	0.696497	Akaike info criterion	2.132442

LEs -Dependent Variable: LNTP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.147178	1.502893	1.428696	0.1542
BMP	**-4.39128**	**1.437762**	**-3.05424**	**0.0025**
BROA	83.29338	34.79865	2.393581	0.0174
FE	-3.72414	0.77554	-4.802	0
LNCA	0.938472	0.047803	19.63221	0

R-squared	***0.616828***	***Mean dependent var***	***24.81507***
Adjusted R-squared	0.611172	S.D. dependent var	1.280506
S.E. of regression	0.798473	Akaike info criterion	2.405718

LEs - Dependent Variable: LNAP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.293692	1.63365	1.404029	0.1615
BMP	**-5.48258**	**1.562852**	**-3.50806**	**0.0005**
BROA	76.72656	37.82624	2.028395	0.0435
FE	-2.82091	0.843014	-3.34622	0.0009
LNCA	0.949842	0.051962	18.27968	0

R-squared	***0.58033***	***Mean dependent var***	***24.59513***
Adjusted R-squared	0.574135	S.D. dependent var	1.330011
S.E. of regression	0.867942	Akaike info criterion	2.572567

Model B:

SMEs -Dependent Variable: LNTP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.89742	2.846134	-2.07208	0.0392
BMP	***-4.38343***	***3.006466***	***-1.458***	***0.146***
BROA	137.8675	39.04768	3.530746	0.0005
ROA	-1.32135	0.580265	-2.27715	0.0236
LNCA	1.216194	0.089134	13.64458	0

R-squared	0.42338	Mean dependent var	21.98235
Adjusted R-squared	0.414742	S.D. dependent var	1.34774
S.E. of regression	1.03105	Akaike info criterion	2.917244

SMEs -Dependent Variable: LNAP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.766609	1.883942	3.591729	0.0004
BMP	***-4.42361***	***2.031408***	***-2.17761***	***0.0303***
BROA	27.80055	26.06922	1.066413	0.2872
ROA	-0.49342	0.394619	-1.25038	0.2122
LNCA	0.804972	0.056504	14.24625	0

R-squared	0.443244	Mean dependent var	23.48484
Adjusted R-squared	0.435026	S.D. dependent var	0.932908
S.E. of regression	0.701218	Akaike info criterion	2.145954

LEs - Dependent Variable: LNTP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.9971	1.536333	1.299914	0.1947
BMP	***-2.92215***	***1.458067***	***-2.00413***	***0.0461***
BROA	53.59948	34.9031	1.535666	0.1258
ROA	-1.93372	0.586933	-3.29462	0.0011
LNCA	0.916446	0.049391	18.55495	0

R-squared	0.600236	Mean dependent var	24.81507
Adjusted R-squared	0.594335	S.D. dependent var	1.280506
S.E. of regression	0.815577	Akaike info criterion	2.448108

LEs - Dependent Variable: LNAP
Method: Least Squares
Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.110542	1.657561	1.273282	0.204
BMP	***-4.43072***	***1.57312***	***-2.81652***	***0.0052***
BROA	53.95092	37.65722	1.432685	0.1531
ROA	-1.19466	0.633246	-1.88656	0.0603
LNCA	0.936593	0.053288	17.57598	0

R-squared	0.568655	Mean dependent var	24.59513
Adjusted R-squared	0.562288	S.D. dependent var	1.330011
S.E. of regression	0.879932	Akaike info criterion	2.600006

Appendix 9.Results of the original model.

LEs - Dependent Variable: LNTP

Method: Least Squares

Sample (adjusted): 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.415248	2.323887	1.039314	0.2996
BMP	-4.441563	3.412192	-1.301675	0.1942
NOB	0.006175	0.015584	0.396253	0.6922
BCR	0.234319	0.346856	0.675552	0.4999
BI	1.013202	10.90037	0.092951	0.9260
BROA	83.95322	40.43201	2.076405	0.0388
ROA	-1.094282	0.728504	-1.502095	0.1343
FE	-3.684348	0.946098	-3.894257	0.0001
LNCA	0.882664	0.053001	16.65384	0.0000
LNCF	0.034939	0.017067	2.047185	0.0416

R-squared	0.625293	Mean dependent var	24.81507
Adjusted R-squared	0.612614	S.D. dependent var	1.280506
S.E. of regression	0.796990	Akaike info criterion	2.419611
Sum squared resid	168.9616	Schwarz criterion	2.550785
Log likelihood	-323.9063	Hannan-Quinn criter.	2.472249
F-statistic	49.32080	Durbin-Watson stat	0.966365
Prob(F-statistic)	0.000000		

Appendix 9. Results of the original model (cont.)

LEs - Dependent Variable: LNAP

Method: Least Squares

Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.153510	2.516204	0.855857	0.3928
BMP	-9.012530	3.694574	-2.439396	0.0154
NOB	0.015129	0.016874	0.896594	0.3707
BCR	0.398315	0.375561	1.060587	0.2898
BI	16.59657	11.80245	1.406198	0.1608
BROA	62.53693	43.77804	1.428500	0.1543
ROA	-0.196303	0.788793	-0.248865	0.8037
FE	-3.186285	1.024394	-3.110410	0.0021
LNCA	0.899317	0.057387	15.67115	0.0000
LNCF	0.024777	0.018479	1.340822	0.1811

R-squared	0.592801	Mean dependent var	24.59513
Adjusted R-squared	0.579023	S.D. dependent var	1.330011
S.E. of regression	0.862947	Akaike info criterion	2.578632
Sum squared resid	198.0842	Schwarz criterion	2.709806
Log likelihood	-345.8512	Hannan-Quinn criter.	2.631270
F-statistic	43.02699	Durbin-Watson stat	0.898779

Appendix 9. Results of the original model (cont.)

SMEs - Dependent Variable: LNTP

Method: Least Squares

Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.388466	3.751787	-1.436240	0.1522
BMP	***-7.108785***	***6.501590***	***-1.093392***	***0.2753***
NOB	-0.021703	0.025900	-0.837963	0.4029
BROA	157.7437	77.49668	2.035489	0.0429
BI	18.33984	12.79237	1.433654	0.1530
BCR	-0.663608	0.606157	-1.094777	0.2747
ROA	-3.522933	1.111530	-3.169444	0.0017
FE	0.696372	0.741494	0.939147	0.3486
LNCA	1.159790	0.098432	11.78265	0.0000
LNCF	0.016401	0.035934	0.456430	0.6485

R-squared	0.432336	Mean dependent var	22.00664
Adjusted R-squared	0.411137	S.D. dependent var	1.349359
S.E. of regression	1.035463	Akaike info criterion	2.946600
Sum squared resid	258.3964	Schwarz criterion	3.087056
Log likelihood	-359.7983	Hannan-Quinn criter.	3.003123
F-statistic	20.39407	Durbin-Watson stat	0.992077
Prob(F-statistic)	0.000000		

Appendix 9. Results of the original model (cont.)

SMEs - Dependent Variable: LNAP

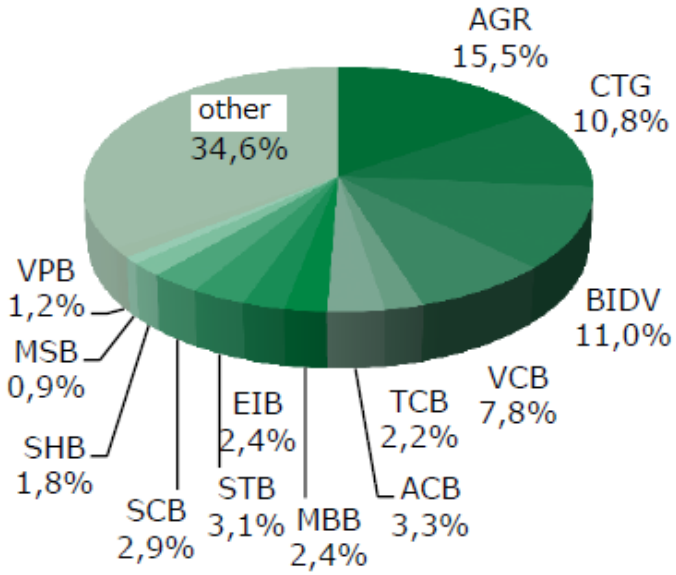
Method: Least Squares

Sample: 1 276

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.538841	2.211539	1.600171	0.1108
BMP	***-5.401980***	***3.861634***	***-1.398885***	***0.1631***
NOB	0.008324	0.015424	0.539659	0.5899
BROA	45.38238	45.80413	0.990792	0.3228
BI	24.52823	7.602994	3.226127	0.0014
BCR	0.451484	0.360969	1.250756	0.2122
ROA	-1.770493	0.660798	-2.679325	0.0079
FE	0.099263	0.439454	0.225879	0.8215
LNCA	0.734065	0.054521	13.46393	0.0000
LNCF	0.044617	0.021386	2.086234	0.0380

R-squared	0.526564	Mean dependent var	23.51297
Adjusted R-squared	0.509173	S.D. dependent var	0.880258
S.E. of regression	0.616701	Akaike info criterion	1.909560
Sum squared resid	93.17829	Schwarz criterion	2.048433
Log likelihood	-233.4689	Hannan-Quinn criter.	1.965420
F-statistic	30.27705	Durbin-Watson stat	0.773266
Prob(F-statistic)	0.000000		

Appendix 10. Credit market share in 2012



Source: VPBank Securities (2012)

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